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Original Department.

Methods of Studying the Physiological Action of Drugs.

By Robert Meade Smith, M. D.,* Philadelphia, Pa.

I. ACTION OF DRUGS ON THE HEART.

A GREAT part of the difficulty which the general practitioner experiences in applying the results of the pharmacological papers which are constantly appearing is, without doubt, attributable to the fact that the methods now in vogue of studying the action of drugs are so radically different from their condition only a few years ago, and the points in physiology on which many of them rest are of such recent discovery, that unless a great deal of time has been spent in keeping up with the literature of these subjects, they are, to the majority of readers, practically incomprehensible. It, therefore, seems to me that a short description of the principal methods employed in the determination of the physiological action of drugs, with an explanation of the physiological points on which this action rests, cannot but be useful in extending the field of physiological therapeutics. And my aim is, further, to give only such methods as can be readily employed, and to describe such instruments as can be readily extemporized by the general practitioner who is deprived of access to physiological laboratories. For the first of these papers I have selected the consideration of the action of drugs on the heart: in the first place, on account of the great importance of this branch of the subject; and in the second, because a large part of our present ideas of cardiac physiology was acquired through the study of the action of drugs.

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Pharmacology is, therefore, not only the foundation of therapeutics, but is an important adjunct to progress in physiology; indeed, we find in drugs some of the most important instruments of physiological experimentation.

In the determination of the physiological action of a drug on the heart, a general idea must first be formed as to the general results of their administration; and to accomplish this, as well as to decide as to the mechanism by which these disturbances of the circulation are produced, the experiments may at the outset be confined to studies of their action on the cold-blooded animals, such as the frog, toad, or turtle. For when in these animals the administration of a poison is followed by disturbed heart's action, it may safely be concluded that the drug has some specific action on the organs of circulation. Such is not, however, invariably the case in the warm-blooded animals. For instance, a drug may exert its main action on the red blood corpuscles, or it may paralyze the respiratory apparatus; in either case its administration to a warm-blooded animal will be accompanied by a compensatory disturbance of circulation as an indirect result of interference with the respiratory changes in the blood, without the poison itself exerting any direct action on the heart. Therefore in mammals when any drug produces change in the character or rate of the heart's action, it cannot at once be concluded that that disturbance is due to direct action on the heart.

This restriction does not apply to the cold-blooded animals. In them the circulation may be totally arrested without, for some time, producing any external evidence of disturbance, provided the toxic action is confined to the heart; or conversely, there may be produced the most marked and varied disturbance of the different functions of the organism without any reflection of that disturbance on the circulatory system. Therefore, when the administration of a poison to a frog is followed by a change in the heart's rate, it may be concluded that the poison exerts a specific action on the heart or its nervous supply; and, on the other hand, the absence of such result is clear proof that in those animals the heart is exempt from the toxic action of the drug.

The first step, consequently, in the study of a drug on the circulation should be its administration to a frog.

To accomplish this the heart should be exposed in a frog, which has been previously rendered senseless by division of the spinal cord with scissors behind the occiput, by cutting through the skin over the breast bone, avoiding the large superficial abdominal vein, and then removing with forceps and scissors the anterior wall of the visceral cavity. The heart is then seen lying in its pericardial sac, and its rate of pulsation may be counted. When the uniform rate of pulsation has been determined, the pericardium should be snipped with a pair of scissors, care being taken not to injure the heart, and a few drops of a neutral solution of the drug in water or in weak salt solution (0.75 per cent.) inserted through a glass tube into the cavity of the pericardium. The rate of pulsation should then be counted at short intervals and the character of the change, if any occur, noted, —whether the heart beats faster or slower, and whether these changes are permanent and progressive, or whether the quick pulse gives way to a reduced rate, or *vice versa*, or whether the normal rate is ultimately regained. Changes in the character of the pulsations should also be noted;—whether the normal rhythm is preserved, or whether the sequence in contraction of the different cavities of the heart becomes disturbed. Thus the ventricle may cease pulsating while the auricles continue to beat, or the auricle may make two contractions to one of the ventricle. Changes in the degree of contraction may also be made out by simple inspection. Finally, if the drug ultimately arrests the heart, it should be noted which cavity stops first, and whether the ventricle comes to a stand-still in systole or diastole.

An experiment carefully conducted in this manner will be of the greatest use in the subsequent decision as to the mechanism by which the characteristic changes are produced. It is hardly necessary to say that such experiments should be several times repeated with different doses, to ensure, in the first place, the obtaining of a uniform result; and in the second place, to contrast the results obtained with different doses, so as to obtain the most complete picture of the total action of the poison on the heart.

Another method, and one which, perhaps, has fewer sources of error than the one just detailed, is to take two frogs of the same species, and as nearly as possible of the same weight, and to excise the heart from each, great care being taken to avoid injury to the heart itself, especially the pulsating venous trunk lying under it (the sinus venosus), and to place them together into a watch glass, containing 0.75 per cent. salt solution. The rates of pulsation of each are then counted, and their uniform rate determined. One heart is then removed from the salt solution and placed in another watch glass, containing a watery solution of the drug, and the changes in its pulsation compared with the heart still in the salt solution. In this way the effects due to injury in removing the heart, may be excluded from the results due to specific action of the poison.

It is noticed that it has been insisted that the drug must be used in watery solution, or preferably in 0.75 per cent. salt solution. This cannot be too strongly emphasized, for there is scarcely a solvent which is itself perfectly indifferent to the animal tissues; thus if alcohol be used as the solvent of the drug, it will be extremely difficult to decide what of the total result is due to the alcohol, and what to the drug. The only way is to compare the results obtained by immersing the heart in an alcohol of the same strength as is used as a solvent for the drug, and comparing the results obtained in the two cases; while even then the combination of alcohol and the drug may exert a different action than either alone.

When the characteristic action of the drug on the heart of the frog has been determined by one or both of the methods given above, it then remains to attempt an explanation of the means by which these results were brought about. To accomplish this a certain amount of anatomical and physiological knowledge is necessary, and there can be no better preparation for original investigation in pharmacology, than is obtained in repeating the simple experiments by which the main points in the physiology of the heart are demonstrated.

The heart of the frog is an egg-shaped organ, slightly flattened at the side, and marked by a

furrow which crosses the heart nearly at right angles to its axis, dividing the heart, in an anterior view, into an upper globular part, the two auricles, and a lower conical part, the single ventricle. Anteriorly the ventricle is seen to be continuous with a cylindrical prominence, the *bulbus arteriosus*, which crosses over the right auricle and divides into the right and left aortæ.

On turning the heart over so as to obtain a view of the posterior parts, the right auricle is seen to be continuous with a bulbous expansion of the *inferior vena cava*, which receives the name of the *sinus venosus;* the line of junction of the sinus with the auricle is marked by a slight furrow.

If the heart is exposed in a frog and its movements carefully studied, it will be seen, in an anterior view, that the wave of contraction which starts the series of movements which constitute a cardiac revolution commences in the auricles. The auricles become distended and full of blood, and then suddenly contract and transfer their contents into the empty and relaxed ventricle which is now gorged with blood; but it is not until the auricular contraction is complete that the ventricle in its turn contracts and discharges the blood into the relaxed *bulbus arteriosus*, which becomes distended, and finally forwards its contents in its turn to the arterial system.

From the fact that while the ventricle contracts, the auricles are already filling, and that the ventricle does not contract until the auricular contraction is complete, it would appear, on superficial examination, as if there was a constant interchange of contents between the ventricle and auricle. But on lifting up the ventricle and dividing the little band which connects its posterior surface with the pericardium, so as to expose the posterior portions of the heart, the true sequence of contraction is immediately evident. The wave of muscular contraction distinctly originates in the *sinus venosus*, extends to the auricles, and it is not until their contraction is complete that the ventricle contracts; but by this time the *sinus* is again already full, and the auricles filling. Therefore, while the ventricular contraction is determined by that of the auricle, and the auricular by that of the *sinus*, the contraction of the latter originates independently of any previous movement.

We are now familiar with the main anatomical characteristics of the batrachian heart and the peculiar sequence of its movements; we are, therefore, prepared to study the conditions upon which that rhythm depends, and the means by which it may be modified, in which study we deal with physiological data whose clear comprehension is absolutely essential to the determination of the action of drugs on the heart.

That the heart contains within itself the conditions necessary for its rhythmical movements, was known to Galen, but that its motive apparatus consists of small automatic nervous centres, situated in the walls of the heart, was first pointed out by Remak.

These cardiac ganglia are three in number and are of different functions: two are motor ganglia, one an inhibitory ganglion. The motor ganglia are the ganglion of Remak, situated at the opening of the inferior vena cava; and the ganglion of Bidder, situated in the left auriculo-ventricular septum. These ganglia are entirely independent of the will, and, under the stimulating influence of the temperature and chemical composition of the blood, communicate to the muscular fibres of the heart their motor impulse.

The inhibitory ganglion is that of Ludwig, and is situated in the inter-auricular septum. The function of this ganglion is to regulate the transmission of motor impulses, produced by the motor ganglia, to the fibres of the heart. It accomplishes this, not by acting directly on the muscular structure of the heart, but through the mediation of the motor ganglia; by this means it compels the motor ganglia to dispense rhythmically and moderately the power which they develope during excitation. As regards the manner in which these ganglia produce the *rhythmical* contraction of the heart, little is known; but that they are the prime factors in producing not only the rhythm of the cardiac revolutions, with its various modifications, but also the starting point of each individual contraction, is one of the best established facts in physiology.

Since the main points in the physiology of the heart have been attained by employing poisons as physiological instruments, when a new drug is given whose action it is desired to determine, the method of investigation pursued must be very similar to the various steps by which our ideas as to the physiology of the heart were originally formed. I will, therefore, first describe some of the simple experiments which demonstrate the functions of the various parts of the heart, with the understanding that the same methods will subsequently be employed in the study of drugs; while further; the repetition of these experiments can be recommended in the strongest terms, as not only the best method of attaining a familiarity with the physiology of the heart, but as an admirable preparation for original investigation or even for the comprehension of the original work of others. And since they can all be performed on frogs deprived of their central nervous system, and consequently practically dead, the most stringent opposer of vivisection can find in them no cause for complaint.

We started with the assumption that the motor ganglia of the heart were the predominant factors in causing the rhythm of the heart, and with the facts that one of these ganglia was situated at the opening of the inferior vena cava and the other in the auriculo-ventricular septum. If we remove the heart from a frog and place it in a watch glass containing weak salt solution we know that the heart continues to beat rhythmically. If now the apex of the ventricle is cut off from the base of the heart with a pair of sharp scissors, dividing the ventricle at about its lower third, the apex instantly ceases to beat, while the remainder of the heart goes on contracting as before. The apex has been cut off from its motor ganglia.

But it may be said that the division of the heart has destroyed the irritability of the muscular fibres of the apex; irritate the divided fragment with an electrical current, and it will contract, to again, however, become quiescent on removal of the irritation. Or, instead of the electrical stimulant supply the divided apex with defibrinated blood and it will again pulsate; but this is evidently merely substituting a chemical for an electrical stimulus and does not disprove the fact that the motor impulse of the ventricle is derived from the ganglia at the base of the heart, the peculiar rhythm being due to an inherent peculiarity of the cardiac muscular fibre. This position is still further strengthened by another simple experiment. If the

heart is exposed in a narcotized frog and the ventricle compressed transversely for a few seconds with the narrow blades of a pair of forceps, the apex ceases to pulsate, though still supplied with its normal excitant and nutriment; it has been separated from its motor ganglia. If the apex is irritated it pulsates and again becomes motionless on removal of the irritation. This condition of affairs will remain for an indefinite period, even for three weeks,—the apex of the ventricle motionless and gorged with blood and the rest of the heart contracting normally.

The position then is this: A fragment of cardiac muscle containing a motor ganglion will pulsate when removed from the body without any artificial stimulus; a fragment of muscle unconnected with a motor ganglion, under similar circumstances will remain quiescent until it receives some external stimulus.

It has already been shown that if a heart is cut in two, one part will pulsate and the other does not. This sub-division of the heart may be carried still further, gradually cutting the heart into fragments until they become microscopic in size. If some of these are then placed under the microscope it will be seen that some of the fragments are rhythmically pulsating and others are motionless; carry the sub-division still further until the ultimate muscular fibrils are reached, and now in nearly all the contracting fibres will be found ganglionic nerve cells, while none are to be found in those which are motionless.

We are now familiar with the methods by which the function of the cardiac motor ganglia may be demonstrated, but before we attempt to apply that knowledge to the explanation of the effects of drugs on the heart, we must first consider the action of the inhibitory apparatus of the heart.

The classical experiment by which the function of the inhibitory ganglion is demonstrated is known as Stannius' experiment, and is performed by exposing the heart of a frog in the usual manner and then distending the œsophagus with a stout glass rod or tube so as to bring the exposed parts more prominently into view. The apex of the ventricle is then seized with a pair of forceps and drawn forwards and to the right, after dividing the little band which connects the posterior surface of the ventricle with the pericardium. With the aid of a delicate curved aneurism needle a thread is then passed between the ventricle and inferior vena cava and under the two aortæ, so that when tied the loop will embrace the line of junction of the *sinus venosus* and right auricle.

After waiting a few moments to see that the heart is beating rhythmically the loop is suddenly tightened and the heart after a few beats comes to rest in diastole, while the *sinus* continues to pulsate as before. After a few moments the ventricle will again pulsate but its rhythm will not be synchronous with that of the sinus.

In another frog prepared in the same manner the heart may be separated from the *sinus* by cutting with a pair of scissors in the line of ligature in the preceeding experiment, and the result is the same; and if now the ventricle is cut off from the auricle before the former commences to pulsate spontaneously the ventricle immediately begins to beat. In a third frog irritate the line of junction of the *sinus* and auricle with a weak induction current, taking care to include the sinus, and the ventricle stops as before. But if $\frac{1}{1000}$ of a grain of atropine is injected into the frog, in a few minutes irritation of this line of junction with the electric current will be powerless to stop the heart, while a ligature applied as in the first experiment stops the heart as before.

Now what inferences are to be drawn from these five experiments? We know that the ganglion of Remak, a motor ganglion, is situated at the opening of the inferior *vena cava*, in other words in the *sinus venosus*; and we know that the inhibitory ganglion of Ludwig is situated in the inter-auricular septum, and the motor ganglion of Bidder in the left auriculo-ventricular septum. Now we assume that Remak's ganglion is an automatic motor centre, *i. e.* "a ganglionic centre in which energy tends to accumulate and discharge itself in the form of motion at regular intervals, the length of which varies with the resistance to the discharge and with the rapidity of the accumulation." The physiological grounds for this assumption are that the succession of acts which make up a cardiac revolution distinctly start in the sinus; that this is the only part of the heart that contracts independently, and that electric excitation of this centre induces increased frequency of contraction of the whole organ. Now by separating the heart from the *sinus venosus*, either by ligature or by amputation with the scissors, we not only remove the heart from its main motor centre but we also irritate the inhibitory centre and so cause arrest of the pulsations of the heart, while the sinus containing the motor centre goes on pulsating as before. After a few minutes, however, the inhibitory effect, induced through irritation, passes off, and then the motor ganglion at the base of the ventricle starts the heart again. So when, without waiting for the inhibitory effect to pass off, we remove the ventricle from the auricle, the motor ventricular ganglion is released from its inhibition and starts the heart again. The effect is somewhat different, however, when we irritate the line of junction of the sinus and auricle with the electric current; then the arrest of the heart is due to the inhibitory action of the ganglion alone, and when this passes off the heart again pulsates. And when this inhibitory ganglion is paralyzed by atropine, irritation with electricity is powerless to stop the heart, while ligature, by removal of the heart from its main motor ganglion in the sinus, arrests the pulsation of the heart as in the first experiment.

Then from our experiments we have learned that a heart will contract rhythmically outside of the body; that this function is due to the presence of motor ganglia, and that the heart may be slowed or stopped either through inhibition from irritation of the inhibitory ganglion, or removal from the influence of the main motor ganglion. Consequently, when, after the administration of a drug, we find that the frequency of the heart's pulsation is reduced, or that the heart is arrested, these results may be produced through irritation of the inhibitory apparatus of the heart, or through paralysis of the motor apparatus.

The study of the action of poisons on the heart, however, teaches that the mechanism by which the pulsations of the heart are regulated, is even more complex than would be supposed from the above.

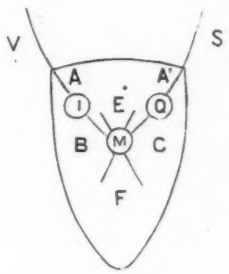
It has already been stated that the heart is governed by an inhibitory apparatus in the brain, whose influence is conducted to the heart through the pneumogastric nerves, and that this inhibition is in con-

stant action, for section of these nerves causes the heart to beat faster. In explaining the action of a drug, therefore, on the heart, possible effect on this extrinsic inhibitory apparatus must not be overlooked, and our next step must be the consideration of the method by which the functional activity of the pneumogastric nerves may be tested. It is readily seen that if both pneumogastric nerves are divided and the administration of a drug still slows the heart, that effect cannot be due to irritation of the inhibitory centres in the medulla oblongata, for conduction from these centres has been prevented by division of these nerves; the effect must be produced by action on some peripheral apparatus, either on the termination of these nerves in the heart, or on the intrinsic cardiac ganglia. Our attention must, therefore, be next directed to the means of determining the functional integrity of the pneumogastric nerves.

To expose the pneumogastric nerve in the frog, the heart is laid bare in the usual manner after pithing, and the diverging aortæ followed up to where they cross the cartilaginous tips of the posterior horns of the hyoid bone. From each of these tips the petro-hyoid muscles are seen passing upwards and backwards to the occipital region. The lower border of these nearly parallel fibres is the guide to the vagus nerve, which is found lying beneath their inner edge. Following these muscles back from their insertion in the hyoid to their origin in the petrous bone, they are seen to be crossed first by the large white hypoglossal nerve, ascending inward to the muscles of the tongue. Nearer the middle line and following the same course as the hypoglossal, is seen the glosso-pharyngeal and crossing over the tip of the inferior horn of the hyoid bone is the laryngeal nerve. None of these nerves should be confounded with the pneumogastric. After the vagus nerve has been isolated and surrounded by a thread, after waiting for a few moments to see that the heart is pulsating regularly, the vagus is irritated with a weak inductive current and the heart stops in diastole, or is greatly slowed, just as in the application of a ligature to the line of junction of the *sinus venosus* and auricle. This identical result, however, is not produced by the same mechanism, For, if before irritating the pneumogastric nerve, a very small quantity of nicotine (¼ gtt.), is injected into the frog, irritation of this nerve will no longer arrest the heart, while irritation of the line of junction of *sinus* and auricle stops the heart as before. If now we place a drop of a solution of muscarine on the heart of the frog to which the nicotine has been given, the heart ceases to beat and remains motionless in diastole, while the administration now of a little atropine in solution will cause the heart to again commence to beat. And on the other hand, if atropine is first given to a frog and then a drop of muscarine placed in the heart, no slowing is produced.

Now to recapitulate these complicated results. We have seen that both nicotine and atropine render the heart insusceptible to irritation of the vagus, but that irritation of the *sinus venosus* will stop the heart in nicotine poisoning, but not in atropine poisoning. Therefore some part of the inhibitory apparatus which is paralyzed by atropine escapes in nicotine poisoning.

The accompanying diagram will serve to simplify our conception of the nervous apparatus of the heart. M is the main motor ganglion, acting on the muscular fibres of the heart by means of its radiating fibres E and F. It is regulated by an intermediate apparatus, represented by the dotted lines, on the one side between the inhibitory ganglion I, which is connected again by an intermediate apparatus with the vagus nerve V; and on the other side by the accelerator ganglion Q, connected in the same manner with the accelerator nerves S.



Now, according to this view of the nervous system of the heart, nicotine is supposed to paralyze the fibres A between the vagus nerve and the inhibitory ganglion; therefore, while irritation of the vagus trunk is without effect, direct stimulation of the inhibitory ganglion slows the heart. On the other hand atropine paralyses the inhibitory ganglion I and the intermediary fibres B: therefore in atropine poisoning direct stimulation of the inhibitory ganglion, like stimulation of the vagus, is without effect.

Again, muscarine slows the heart, or stops it in diastole, in a similar manner to irritation of the vagus nerve, while its effects are not interfered with either by the previous or subsequent administration of nicotine; therefore, muscarine must act on some apparatus more central than that affected by nicotine, and as its effects are gradually developed, it is supposed to act by irritating the inhibitory ganglion I. But, again, we have seen that muscarine will have no effect after the injection of atropine, and that atropine will cause a heart stopped by muscarine to recommence beating; therefore, atropine acts on some more central apparatus than muscarine; in other words, on the apparatus intermediate between I and M.

It only now remains to point out the manner in which the methods indicated above may be applied to the localization of the action of poisons on the heart.

Let us suppose that we have found in our preliminary experiments on the isolated heart, that the administration of a drug produces increased rapidity of the pulse. The first explanation which would occur would be that the result was due to paralysis of the inhibitory apparatus. We, therefore, irritate the vagus nerve with an electric current, and find that the rate of pulsation is not reduced. We then irritate the line of junction of *sinus* and auricle, and still produce no result. A few drops of muscarine are then applied to the heart, and if reduction in the rate of pulsation does not then occur, it may be concluded that the drug in question has paralysed the apparatus intermediate between the motor ganglion and inhibitory ganglion.

Any break in the sequence of results in this series of experiments will, of course, indicate the apparatus which is implicated in the poisoning. Thus, if it is found that irritation of the vagus trunk fails to slow the heart, but that the heart is arrested by the ligature around the junction of the *sinus* and auricle, it is evident that the terminal fibres of the pneumogastrics are paralyzed, as in nicotine poisoning; and the position would be rendered certain if we found that after the pulse had been accelerated by the drug in question, the application of a drop of muscarine to the heart was able to arrest its pulsations.

But suppose that in the case of increased rate of pulsation after the administration of a poison it was found that irritation of the vagus trunk, or, indeed, of any part of the inhibitory apparatus, produced slowing of the heart; it must then be concluded that the effect is due to stimulation of some portion of the cardiac accelerator apparatus. Further than this we cannot at present go, as the number of drugs which act on the accelerator ganglia is very limited, and not yet well worked out.

On the other hand it is possible that the main effect of the poison has been to produce slowing of the pulse. We have then two possibilities to consider: the drug may have produced irritation of some portion of the inhibitory ganglia or nerves, or paralysis of the motor apparatus.

In the first case the action of the poison may be localized by a series of exclusions. Thus if the slow pulse persists after section of the trunks of the pneumogastrics, we know that the effect is not due to stimulation of the cardio-inhibitory centres in the medulla. If nicotine, administered after the full effects of the poison have been produced, does not restore the normal rate of pulsation, we know that the inhibitory effect is most probably produced by stimulation of the intrinsic cardiac ganglion, and if atropine restores the normal heart-rate, this supposition is confirmed.

It is further evident that the departure of any of these experiments from the results above indicated will at once localize the action of the poison. Thus, if we find that the slow pulse produced by the poison disappears when the pneumogastrics are cut, it is clear that the heart has been inhibited by stimulation of the inhibitory centres in the medulla. If nicotine restores the normal pulse rate the inhibition must have been due to stimulation of the vagus trunks; while if nicotine fails to produce any effect, and atropine restores the normal pulse, the inhibitory ganglion must have been paralyzed.

It is, however, possible that atropine also fails to remove the inhibition; in that case it only remains to suppose that the drug has paralyzed the motor apparatus of the heart, implicating either the motor ganglia so as to prevent the accumulation and discharge of motor force, or the muscular fibres in such a manner as to prevent their responding to the stimulus coming from the motor ganglion. The indications which will point to the localization of the action of the poison on the main motor ganglia or on the muscular fibres of the heart are to be found in the general features of the symptoms produced by the poison. If the heart gradually becomes weaker and weaker, and the pulse gradually slower without any disturbance of the cardiac rhythm, it is probable that the result is due to paralysis of the muscular fibre of the heart without any implication of the nervous system, and this supposition would be greatly strengthened if it was known that the drug produced paralysis of other striped muscles, as the conditions which modify the functional activity of the cardiac muscle cannot be separated from those governing the other muscles of the body.

But if on the other hand the slowing of the pulse is irregularly produced, sometimes giving place to increased pulsation, sometimes almost stopping, then making a number of rapid beats, producing the condition known as *delirium cordis* it may be confidently concluded that the motor ganglia of the heart are affected by the poison.

Conjunctivitis.

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INFLAMMATION of the mucous membrane lining the inner surface of the eyelids, from whence it is reflected to the eyeball, covering the anterior surface to margin of the cornea, where only the epithelial layer is continuous over the cornea, is called conjunctivitis. That this structure is frequently the seat of inflammation is readily understood, on account of its exposed situation. By many it may be thought to be a subject for the specialist only, consequently need not be discussed at length in a general medical journal. The subject comes up for the purpose of demonstrating to physicians that they have employed the old remedies long enough, and that we have new ones to act as substitutes, whose action is based somewhat on the cause of the disease. It is fair to suppose that there are few persons who have not at some time in their life suffered from conjunctivitis, and since this large majority of people consult their family physician first, no matter what the trouble may be, it is he who should be posted in regard to the treatment of the simpler forms of this disease, and recognize the severer types, in order to recommend the patient in sufficient time to the specialist. From the current literature on the above subject it is quite evident that in many instances the disease is not thoroughly understood, nor have the proper remedies been applied. In no other structure of the body are we able to more accurately study an inflammatory process in all of its stages than in an inflammation of the conjunctiva. The structure is almost transparent, and the blood vessels can be traced to their finest ramifications in the healthy tissue. The inflammation may be local or general; it may at the same time be dependent on some specific cause, so as to call for a slight change in treatment, but the entire pathological process is going on before you; it does not require physical signs or instruments of precision to recognize it. The conjunctiva, in speaking of its diseases, had best be divided into two parts, first covering the inner surface of the lid, and the bulbar conjunctiva covering the eyeball. The palpebral portion may be involved in disease, and not affect the other portion, and *vice versa*. It is transparent, so that the underlying structures can be seen in the lid; the meibomian glands can be distinctly traced; on the eyeball the vessels of the

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sclerotic and subconjunctival tissue can be seen to be separate and distinct from those of the conjunctiva. Where hyperæmia or an engorgement of the blood vessels occurs, which is the first step in inflammations, it is recognized by an increase in size of the vessels, the capillary system becomes visible, the membrane naturally takes on a deeper hue of red, and loses its transparency. These symptoms are most marked in the palpebral conjunctiva. The bulbus conjunctiva, containing only a few visible vessels, becomes quite red, and shows the course of the finest capillaries. In the cul de sac, or fornix conjunctiva, that portion where the conjunctiva passes over from the lid to the eyeball, the redness is not always in proportion, since the blood vessels are larger and are differently distributed in this region. In simple conjunctivitis the hyperæmic membrane is movable over the clear underlying structures. It is not meant here that an inflammation of the conjunctiva is the only pathological process that will bring about a hyperæmic condition, and that every redness is due to an inflammation of this membrane. In pericorneal injection the irritation seems to increase as we approach the cornea, and may be caused either by an abnormal distribution of the ciliary veins belonging to the episcleral system, or the distribution can readily be made by the irritation being circular, and lying somewhat deeper than the conjunctiva. It is well marked in inflammation of the uveal tract, iris and ciliary bodies. The direct communication of the visible vessels with the vascular system of the iris and ciliary body, through the anterior ciliary vessels, explains how the pericorneal or episcleral injection can occur. In deep-seated disease of the cornea, or a localized affection of the conjunctiva near the corneal margin, as in phlyctenular inflammation, or where a foreign body has lodged on the cornea or conjunctiva, the irritation is local, and diminishes as the distance from the cause increases. Scleral injections must not be omitted, since they may mislead, unless the diagnostic points are always borne in mind. Usually the redness is situated some little distance from the cornea, and may involve a larger or smaller extent of surface, but the conjunctiva overlying it can be moved from side to side without displacing the hyperæmic vessels, demonstrating clearly that the point of irritation is deeper than the conjunctiva, which is an important factor when the question of treatment comes up. There are three varieties of injection of the eye that must be differentiated:

1. Scleral injections.
2. Pericorneal injections.
(a) Pericorneal episcleral.
(b) Pericorneal conjunctival.
3. Conjunctival.

Were these processes to occur separately, physicians would not experience so much difficulty in distinguishing the difference, but they may occur in combination, making the diagnosis much more difficult, for the cause may be mistaken for the effect. If either of the above described conditions continue for any length of time, it is quite evident that other changes besides hyperæmia have set in, which also changes the picture somewhat. The membrane becomes thickened, possibly œdema through transudation of serum especially marked in the cul de sac and ocular conjunctiva occurs. The next change is with reference to the surface of the conjunctiva which formerly was perfectly smooth and glossy, now becomes uneven; the papillæ and lymph follicles become enlarged, giving to the structure a velvety appearance. In occasional cases where the hyperæmic process has become chronic, new formations put in their appearance on the conjunctivæ pulpbrarum. Whether these formations are to be considered physiological or pathological is with many yet a disputed question, and while it may remain open we do know that they are not specific but simply complementary; they cannot be compared with the bodies that seem to be the same in granular conjunctivitis or trachoma. It is not intended in this essay to give a description, pathologically, of all the different forms of conjunctival inflamations. For our purpose it will be sufficient to make two classes; the first including those inflammations that change the secretions of the membrane, while to the other class belong such as cause a change in the structure of the membrane itself. Here again we must be on our guard, since these processes occasionally overlap, which makes a recognition of the disease a little more difficult. If it is not possible to educate the general practitioner sufficiently that he is able to recognize at a glance the difference between a case of follicular conjunctivitis and a case of trachoma, since he has not had the necessary material for observation or because he has not the different text books, then at least let us make an effort to put efficient remedies into his hands, yet only such as will not do more harm to his patient than the disease will. It is quite difficult to write a book equally comprehensive to the mind of all of its readers; it is even impossible to deliver a clinical lecture that will be understood alike by a few hundred students. The fault of this does not wholly lie with the writer or lecturer, but almost entirely with the student.

If we take, for illustration, the acetate of lead, which is recommended as an excellent astringent in every text book extant, it is indicated in conjunctival inflammations, but we must bear this point in mind, that many of these inflammations have a tendency to involve the cornea, and cause an abrasion of the epithelium. Under these circumstances it would be a positive injury instead of good, as we will see later on. If we condemn a drug that has been in use for decades, and in fact employed so promiscuously that the laity use it without the advice of a physician, then it necessarily becomes our duty to point out the reason why its use is objectionable. We will accept the fact that acetate of lead has astringent properties but there are other astringents far more safe if an astringent is indicated at all. The lead solution, if used when the cornea has any abrasions upon it due to a secondary involvement, or an injury direct which is often overlooked by the physician when he makes his first examination, causes a deposit of lead wherever the epithelium is missing, which can never be cleared up. Should this opacity be central, vision is very much disturbed, in fact destroyed; this may occur rapidly. I have seen a cornea perfectly clear treated with a lead solution, develop opacities in the course of three or four days that remained permanent, and at the present writing I have two cases of this description under treatment which illustrate this point so forcibly that a brief history of one of the cases may help to explain matters: Johnny H., æt 12, received an injury to the eye by the explosion of a

fire-cracker. He called on his family physician who supposed from the appearance of the eye, which was swollen and very sensitive to the light, that the injury was only conjunctival and therefore prescribed a lead solution, which was used by the patient at home. In the course of one week the upper two thirds of the cornea was covered by a dense opacity, so as to shut out the light entirely from the pupil. In the course of time the inflammation will subside, but the opacity will remain, which is very dense, rendering the organ useless. And all of this can be attributed to the ignorance of the physician, the loss of an eye by a single prescription. There is no author who recommends this treatment in corneal disease. True, but since other remedies are just as efficient, and in many instances individuals are not positive as to their diagnosis, the safest plan would be to employ a remedy that will not injure the patient when applied in a faulty diagnosis. Authors generally do not lay much stress on this important fact. They do not give caution as to what may be the results if a remedy is improperly used. This is on the same principle as when Prof. Seely recommended the use of eserine in the treatment of iritis. His suggestion was not for the student or the practitioner of general medicine, but for the specialist. He saw at once that it would be dangerous, yes criminal, to attempt to teach a class of students the indications for eserine in iritis, since they positively could not understand the finer points indicating its use, or contraindications, and therefore cause their patient more harm than good. Eserine is, beyond a doubt, a useful remedy in iritis, but it becomes absolutely dangerous in the hands of persons not knowing its effect. In an essay of this kind it is not necessary to describe all the varieties of conjunctival inflammations, their cause, course, and prognosis, but we want to lay down some plain, general, comprehensive rules, relative to the treatment, that can be understood by the general practitioner. Recently Alt, of St. Louis, published a work on ophthalmology, specially arranged for the general practitioner, but he undoubtedly made the mistake of thinking that brevity was the desideratum, which is not the case. We should aim at conciseness, but not by omitting some things, or at the expense of simplicity. The causes of conjunctivitis are many, and in nearly all cases it is desirable to know exactly the cause of the irritation, as the following brief history of a case will show:

Samuel S., aged 16, had suffered with sore eyes for a number of years, and had received treatment on the plan generally given, by caustics and astringents, but the effect was nil. He was a book-keeper, and used his eyes a great deal. His eyes looked red and irritated; the conjunctiva on the eyelid was inflamed; the underlying tissue could not be seen reflecting through. The margin of the lid was thickened, due to the long-continued irritation. An effort to use the eyes caused a heavy dull feeling. There was but little discharge from the inflamed surface, save during the night when the lashes were a little glued. The patient had been treated with the crystal sulphate of copper, solutions of nitrate of silver, and sulphate of zinc, continuously, for nearly two years. The disease had the characteristics of a simple catarrhal conjunctivitis, and yet the remedies generally employed failed to give relief in this instance. Worse than that, the caustics and astringents used had a tendency to cause a structural change in the conjunctiva. The real cause of the disease was due to an error in refraction. The patient suffered from irregular astigmatism, which, when it was corrected by suitable glasses, relieved the patient perfectly, and enabled him to follow his business with all the comforts of one having normal eyes. The symptoms soon passed away without the use of any remedies at all, which indicated plainly that it was only necessary to remove the cause. In a large majority of cases, as they present themselves for treatment, conjunctivitis is only a symptom from the beginning, and the more violent the treatment the more damage is done to the delicate structures. In the above case the mildest sort of treatment certainly would have been more suitable than the use of irritants, which only added fuel to the fire. It is always a pre-requisite to understand the cause of a disease, if it should be treated on a scientific basis.

In many instances we may not be able to determine it, therefore must treat according to symptoms. It is my firm belief that many, if not all, the varieties of conjunctivitis are caused, or are aggravated by the presence of germs. By many this assertion may be considered premature, but if we are permitted to judge from clinical results, we will find that just such agents as have a decided parasiticidal action have given the very best results in some of the severer cases of conjunctivitis. Many of these remedies also act as astringents, that is, contract the engorged vessels, but their effect goes farther than that, and it seems as though there was only one solution to the problem: they destroy all germs and thereby remove the cause of the irritation. The mucous surface of the eyelids is exposed continuously, and when the epithelium is abraded, germs may find a suitable nidus for development, and thereby aggravate the disease. This view has been held by some prominent authority on granular conjunctivitis, and while it seems as though we must let the question remain where it is, we do know that agents possessing the property of destroying bacteria have proven themselves quite efficient in just those diseases where germs are claimed to be the source of irritation. What makes the germ theory more plausible is that clinical observations verify experimental researches, and remedies selected and applied with that view, seem to give far better results than the use of caustics and astringents, and it is quite reasonable that they should, since they cause no pain, do not irritate, nor do any injury to even a healthy eye. The prognosis of this class of diseases is generally good, but unless the cause is discovered and removed, sometimes an insignificant inflammatory process will turn out to be very troublesome. The disease may become chronic, or which is far worse, the cornea becomes secondarily involved. In case of the latter complication, which occurs in a large percentage of the severer cases, our entire attention must be given to the cornea, and all irritating remedies forbidden. When the disease has become chronic we have not only the original disease to treat, but there are usually tissue changes that must be restored. In chronic trachoma the conjunctiva undergoes pathological changes which leaves the membrane nothing but a mass of cicatricial tissue, which, by contracting, has a tendency of changing position

of the free margin of the eyelid, and thereby disturbing the direction of the eyelashes and the position of tear duct. These tissue changes are not of as much importance as those occurring in the cornea. The irritation from the roughened inner surface of the upper lid, or from the constant scratching of the inturned eye-lashes causes opacity of the cornea, which may vary in degree from a mere haziness to a dense opacity, fed by a large number of blood vessels, which gives it an appearance of a fleshy mass.

Under circumstances as those first mentioned it will be found quite difficult to restore the structures to such a state that they will perform their functions properly again. The prognosis in these cases differs very much; no two cases are exactly alike; it will depend entirely on the amount of change that has taken place in the tissues. In purulent inflammation of the new-born the prognosis will largely depend on the stage of disease when application is made for treatment. If the disease is treated properly before the cornea becomes involved, the prognosis is quite good. In diphtheritic inflammation, which is quite rare, the process is a rapid one, and requires the very best attention from the beginning, otherwise the cornea may be destroyed in the course of 24 to 36 hours. In purulent conjunctivitis the result is good, as a rule, while the more simple forms of inflammation run their course and subside quite favorably with proper treatment. Relating to the treatment of this class of cases, there exists a diversity of opinion, possibly based on the cause. It is a well-known fact that astringents and caustics have been always used, and the older text-books do not mention any other remedies; for the different varieties of inflammation the strength of the solution was the only change in treatment, and while many cases made a good recovery, the very principle on which their application was based was erroneous. Their action was that of an irritant; the immediate effect after being applied, was to cause a contraction of some of the finer blood-vessels, but their secondary effort is one of relaxation. They are not true astringents; they are simply irritants, and the after-effect leaves the structures in a worse condition often than before the application. Who has not seen instances in the practice of the adherents of astringent where the patient, after months, sometimes years of treatment, was not in a far worse condition than before treatment was commenced. In many cases of chronic trachoma the patient was sent home for recuperation after a few months of treatment. When the surgeon of to-day dresses a wound or an injured limb, his whole aim is to put it in a condition of absolute rest, and allow nothing to irritate it; his dressings are soothing, and his whole course of proceeding tends to encourage repair without his interference again after the first dressing. Why not treat inflammations of the conjunctiva as near as possible on the same basis. We cannot put the eye to rest, but we need not irritate an inflamed structure; if we cannot do any good with our remedies, is it absolutely necessary to keep up a continued daily irritation by astringents?

It is not my intention simply to condemn astringents, but I want to show that we possess remedies that we can offer as good substitutes.

Mercury in various forms has been employed in diseases of the eye for some time. In mild cases of inflammation a solution of boracic acid in water, or if it is desired to use it stronger, a solution in glycerine gives admirable results. Boro-glyceride has been used in trachomatous conjunctivitis, and also in contagious ophthalmia of asylums, by Turnbull and Arlt, in cases of a chronic nature, where all the local remedies had been used, and the results have been gratifying. Yellow oxide of mercury, in the shape of an ointment, properly prepared, has been used for 10 to 12 years, at the Medical College of Ohio, eye and ear department, to the exclusion, absolutely, of all caustics and irritants. The results have been such that there is no desire on the part of the physician to go back to the old remedies. It is not meant that yellow oxide ointment will cure any case of eye trouble, but it is certainly more desirable to treat patients and give them no pain, than to see them sitting around bathing their eyes for an hour after treatment before they can return home. Though the curative results of the two methods were alike, this one point would decide in favor of the painless method. Complaints have been made by a number of observers that the yellow oxide ointment (gr. x to the ℥ of vaseline) causes quite an irritation, but we need not hesitate to state that either the materials employed were not chemically pure, or else the powder was not thoroughly rubbed up, leaving little particles of mercury that cause irritation. My friend, Dr. E. Wilfert, who supplies me with the ointment, is the only druggist who has succeeded in properly preparing it. Sometimes the vaseline is at fault, containing free acids, but oftenist the fault lies with the method of preparation. It is a good application in phlyctenular conjunctivitis, and has the advantage that it need not be suspended when corneal trouble sets in, or is present, since it is also employed in diseases of the cornea. There is only one contra-indication, and that is in cases where there is severe lachrymation. The medicament being an oily substance, the tears prevent it from properly entering the eye, and it is washed out.

In these cases a solution of bi-chloride of mercury may be employed, (gr. 1 to ℥ xvi.) or what is still better a solution of eserine (4 gr. to ℥ i.) is used as preparatory to the ointment; it has a tendency to stop the tearing at least for the time being, so that the ointment will take hold better. All of these remedies seem to act best when put into the eye but once during the day. Eserine is the typical astringent, a remedy that gives very satisfactory results in inflammatory conditions, since its effect is so powerful that the smaller vessels disappear in the course of ten or fifteen minutes after its application, nor has it a secondary after-effect of dilatation. It is an admirable remedy in phlyctenular conjunctivitis and keratitis (the two diseases are often found together), nor need it be discontinued when the cornea becomes involved; no damage can be done with it when used but once a day; its effect is often magical, a single application in twenty-four hours is often sufficient to cure an acute attack of simple conjunctivitis. There is another remedy quite valuable when properly employed, viz: warm water. In purulent inflammations it has been my custom to prescribe a solution of boracic acid, gr. xv. to water ℥ j, which the patient is to use once every half hour, but before using the medicine the eye had to be bathed for five or ten minutes, then the solution, about two to three drachms, was allowed to run between the folds of the eyelids, and who

would expect suppuration to continue under this plan of treatment? It stops it almost at once, the tissues regain their normal appearance and color again. In inflammation of the new-born, the use of nitrate of silver is defunct; it is a remedy that need never be used in any form of conjunctivitis; in the treatment of these cases cleanliness is the main factor; bland remedies, such as the bi-chloride and boracic acid solution instilled every half hour, with ablutions and removal of shreads of pus before each treatment is all that is necessary. Carbolic acid has been recommended in croupous and diphtheritic conjunctivitis, but its virtues in this form of trouble are few, while it often does absolute harm. In this form of trouble eserine in combination with the ordinary means of cleanliness, as good results are obtained as with any other form of treatment. Caustics are absolutely contra-indicated since they would only cause a spread or involvement of new tissues, on account of their irritating properties. For the ordinary forms of conjunctivitis that the general practitioner usually meets throughout the country, there is no single remedy that answers his purpose better, with entire satisfaction to his patient,than the yellow oxide of mercury in the form of an ointment, but it must absolutely be free from all irritation.

We must not be hasty in condeming a remedy because we cannot obtain the results that are claimed for it by some observer. Great care is always necessary that the diagnosis is correct; not so much for the variation that would be made in the treatment, but for any kind of treatment it becomes absolutely necessary to remove the cause, to have good results. If disease of the tear-passages or a slight eversion of the punctum is the cause of the conjunctivitis, it is not at all probable that any or all of the local applications would fail to do good. With a faulty diagnosis the only thing that will assist the practitioner, is the use of remedies that will do no harm if they do no good. If a soothing remedy is applied to the inflamed membrane, it will, undoubtedly, do more good than the use of caustics and irritants, as is advised by many authors. If the inflammation seems to be local, the physician must examine the cornea and conjunctiva carefully with double convex lens and artificial light, in order to find, if possible, if the irritation is due to a foreign body. This little operation, though usually simple in skilled hands, may become difficult when a vitreous transparent body has lodged in the eye, since it is more difficult to see. We must not neglect to mention the use of jequirity in trachomatous conjunctivitis. While the current literature, which was very much overfilled with reports of cases of granulations treated with this drug, for some time past almost shows that the interest is beginning to fail, and that the new drug will meet with no better fate than those ordinarily introduced, fluctuating for a while and then sinking into oblivion, there is no doubt that if the action of the remedy is properly studied many cases will be found where it is indicated. In the hands of the author it has acted successfully, and cannot be substituted by any known remedy.

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The New French Pharmacopœia.

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In March of the present year the codex of 1866 was, by a decree of the French republic, superceded by a new one, rendered necessary by the inevitable march of discovery and improvement.

The decennial revision of our own national standard is an event so fresh in our memories that we regard with unusual interest the changes which our neighbors, after so long an interval, have found themselves compelled to make. Naturally, also, we are led to compare the French publication, as a whole, with our own.

The codex of 1884 is a large octavo volume of about 750 pages; that of 1866 was larger by about 80 pages, while our own pharmacopœia, although it forms a volume nearly as thick as the new codex, numbers scarcely 500 pages.

Wide margins, however, and large print, and a general regard to elegance of appearance, rather than to mere utility, characterize the French production, and one can see at a glance that our 500 pages contains more matter than the 750 of the codex. The arrangement of the French pharmacopœia, although much more convenient than the previous edition, is not yet reduced to the simplicity of our own alphabetical plan. The volume is divided into three principal portions, the divisions being indicated ingeniously by the different colors of the edges of the leaves.

Part first (edges white) enumerates the animal and vegetable substances comprised in the materia medica. In most cases no descriptions are given; merely the French name, the scientific classification, and, in the case of plants, the part employed. Only where substitutions are liable to occur is a description given.

Part second (edges blue) describes the active principles derived from crude drugs, together with all mineral substances employed in medicine.

Part third (edges red) is occupied with galenical pharmacy, while we find in part fourth (white edges) an account of some of the principal articles of the veterinary materia medica.

There is no list given, as in the U. S. pharmacopœia, of the remedies dismissed or of those added to the officinal list; neither do we find any references given under the head of the several crude drugs to the preparations in which they are employed. To a foreigner, or one not conversant with the subject matter of the volume, such references would prove very useful. The book is, however, provided with a good double index, Latin and French.

It is not our purpose to enter much into detail in noting the changes that have been made in the revision of the codex. A good many articles have been omitted from the list of the materia medica, having fallen into disuse. A large number of new remedies, however, have deservedly found a place in the list; among them we note arenaria rubra, boldo, dita bark, eucalyptus, jaborandi, podophyllum. Boldo is called *Pneumus* boldus, while all authorities in the English language give the name as peumus, but without etymology.

The list of pharmaceutical chemicals is of course considerably enlarged. Chemical formulas, atomic and molecular are given; the articles are more fully char-

acterized than formerly, and a list of impurities and common adulterations or substitutes is given under each article, although tests are rarely given. The more actively poisonous articles are indicated by the word *toxique*, in italics. The arrangement of articles is alphabetical, but in all salts the acid is named first. Thus to find quinine sulphate, we must look under the head of "Sulfate."

The hydrocyanic acid of the present codex has a strength of one per cent., just half that, theoretically, of the British and the U. S. preparation. The prussic acid of the codex of 1866 was, however, ten times this strength.

Of course a one per cent. solution is preferable to either of the others, but it would seem as though some word of caution were necessary where so great a change as this was made in the strength of a powerful medicinal agent. Probably, however, it has been found long ago that a ten per cent. solution of this acid could not be preserved, and it is more than likely that pharmacists have been in the habit of reducing it to a one per cent. strength—a practice, by the way, that is common in this country; a two per cent. solution always loses strength by evaporation of the acid.

Aconitine is retained in the revised codex, but it now designates a crystallizable alkaloid, whereas, in the codex of 1866 we were told that the amorphous product obtained by following the instructions given, was much more active than the crystallized product which had been previously employed under the name of aconitine. It will be remembered that in the late revision of the U. S. Pharmacopœia, this preparation was discarded, because found so variable in quality. This action we believe was wise. While an aconitine of uniform strength can no doubt be prepared by careful attention to every detail of the process of manufacture, it is certain that the products of different manufacturers—whether amorphous or crystalline vary much more widely in activity than do samples of even the crude drug, notoriously variable as this is. The same remarks apply almost equally to digitalin, only that side by side with the old formula, we find now a new one for a crystallized digitalin with a note of caution, under the former only, directing that unless the crystallized digitalin is prescribed, the amorphous article should always be dispensed.

Processes for preparing the various alkaloids from the crude drug, which are omitted in the last edition of our pharmacopæia, are retained in the codex, many new ones being added.

Quinine sulphate is said to contain 7 molecules of water of crystallization, and is allowed 15%, as in the German pharmacopœia. The U. S. P. allows 8 molecules (16.18%) of water of crystallization, a liberty that some manufacturers are only too ready to avail themselves of. As a matter of fact commercial quinine does not often contain much more than 15%, although it frequently holds a proportion corresponding with 7½ molecules of water of crystallization.

The test for the purity of quinine is the same as that adopted by the U. S. P., but an unnecessary note is added, stating that quinine which is pure, if effloresced, may not pass the test. Of course the amount of impurity shown by it would be too great, if the salt had lost water by crystallization, but if the quinine were really pure this would make no difference. Of course the presence or absence of the water of crystallization should be noted, and the quantity of water employed in making the solution should be proportioned to the amount of alkaloid.

The third portion of the volume is that which naturally interests us most. The alphabetical arrangement adopted in this is a great improvement over the haphazard plan of the previous edition. The first thing that strikes one in glancing over the pages is the number of syrups, elixirs, electuaries, etc., and the next thing is the curious survival among the most scientific people in the world of the polypharmacy of the days when drugs were believed to have magical powers, and to influence one another in mysterious ways when combined. Mercurial plaster contains twelve ingredients, diachylon, 10; electuary of senna, 16; alcoholature vulnéraire (tinctura vulneraria), 19; espéce vulnéraire (Swiss tea), 20, while the famous theriaca still retains its quotum of 56, although this is a small portion only of the original compound. Such prescriptions look strangely reduced to the exact proportions of a modern formula and written out in grammes, but they must, before many years, go their ways with the other "mere curiosities" that we are told have been omitted from the revised codex.

It is interesting to note the points of similarity and of difference in the case of important drugs between the official preparations of the codex and those of our own pharmacopœia. Tincture of aconite root, introduced now for the first time into the codex is made with 60% alcohol in the proportion of one part of the root to five of the spirit. The German pharmacopœia directs double the quantity of the menstruum. Our pharmacopœia makes from 400 parts of drug only 1,000 parts of tincture, using strong alcohol as the menstruum. The British preparation is made in the proportion of 1:8. The codex directs that tincture of aconite leaves be prepared in the same manner as tincture of aconite root. It retains the old "alcoholature" of aconite leaves, adding a similar preparation to be made from the fresh root.

These preparations are made from the green drugs, being identical with the preparation, which, in this country, have been generally known as specific tinctures. Our own pharmacopœia very wisely cut down the number of fluid preparations of aconite to the fluid extract and the tincture of the root. It would have been still better to have discarded the tincture, which has the same range of use as the fluid extract. Then when the old tincture had been forgotten, a new one, made in the proportion of 1:10 might have been introduced to supply a real want. It would not have been safe to change the strength at once from 5:20 to 1:10.

The tinctures of belladonna (leaf), cannabis indica, stramonium (leaf), henbane, foxglove, colchicum (seed), also of ipecac, arnica (flowers), coca, rhubarb, squill and senna, are made like tincture aconite in the proportion of 1:5 (one of drug to five of menstruum), and with the same menstruum. The U. S. Pharmacopœia makes most of these tinctures in the proportion of 15:100 (15 of drug to 100 of *product*), but gives no formula for tinc. of coca or ipecac, and adds cardamom to the tincture of rhubarb (rhubarb 12 parts, cardamom two, in 100). Our formulas for tinctures of arnica flowers and of cannabis indica, correspond closely in strength with those of the codex, but we employ, very properly, a stronger spirit

for the latter. Tincture of nux vomica is made according to the codex in the usual proportion of 1:5, with strong alcohol as a menstruum, and this is about the strength of the U. S. P. tincture.

Fluid extracts are not as yet used in France sufficiently to obtain recognition in the codex.

No less than five fluid preparations of opium are described, varying greatly in strength. There is a tincture of the extract of opium 1:12, or one of opium to six of spirit; Rousseau's laudanum, 1:4; Sydenham's laudanum, 2:15; paregoric, 1:220; syrup of opium, 1:250.

Dover's powder is now made without licorice, corresponding in strength with our own preparation, but using in place of sugar of milk a mixture of equal parts of niter and potassium sulphate.

We find among the new preparations an extract of lily of the valley, prepared from a mixture of the fresh flowers, leaves and roots, also another, prepared from the dry drug, exhausted with water.

Extract of ergot is an important addition to the list of French officinals. It is simply an aqueous extract of the drug, the concentrated solution having been treated with alcohol in sufficient quantity to produce a slight precipitation, but the product not washed subsequently with strong alcohol as in the German preparation.

Two kinds of pepsin are recognized in the codex, *pepsine médicinale*, and *pepsine extractive*, the latter being the stronger of the two, and being described as soluble, with only a slight residue, in water.

The strength of pepsin is to be determined by its power to transform fibrin into peptone. Two parts of the soluble pepsin, or five of the "medicinal" are placed in a beaker with 100 parts of fibrin, 600 parts of water and six parts of hydrochloric acid (sp. gr. 1.171), and kept six hours at a temperature of 50° C. (122° F.) At the end of this time the fibrin should be so completely peptonized that nitric acid will not precipitate the solution. The test is much more scientific and at the same time more rigorous than that of the U. S. P.

As in former editions, we find in this an appendix containing the principal legislative enactments relating to the practice of pharmacy in France. We look in vain for an appendix corresponding with the collection of tables found in our own pharmacopœia, but, according to the French ideas, these belong to the introduction rather than to the conclusion of the work, and we shall find them under the head of "notions préliminaires," immediately following the preface.

This portion of the work has been carefully rewritten. All relating to the ancient French system of weights and measures has been omitted, as well as the tables of comparison of the decimal units with those of the various systems till recently in use in the different European states.

The English and American weights and measures enjoy the distinction of being the last survivors of the systems evolved in the world's infancy—and to which some of us would cling with the unreasoning pertinacity of childhood.

A new and very full table is given, stating the weight of a drop of each of the more important liquids of the pharmacopœia. There is a description of the *densimetre* (hydrometer) of Brisson, which is now employed in place of the old Beamé scale. The readings of the instrument correspond with the apparent specific gravity of the fluid. A table is given, however, showing the value of the degrees of Beamé's instrument.

A new alcoholic table has been constructed, based upon that of Gay-Lussac. This table gives as the specific gravity of absolute alcohol, at 15° C. (59° F.) 0.794, undoubtedly too high a figure, but agreeing with that still accepted in most of the alcoholometrical tables.

Incidentally the apparent weight of a litre of water at 15° C. (59° F.) is given as 998.08 at average barometric pressure. This statement is not in accordance with most of the text-books published outside of France, but we must accept it as conclusive when it appears in an official publication like the codex. The weight ordinarily given is, in fact, the weight *in vacuo*, 999'2. It is unfortunate that none of the accounts of the metric system in our text-books state that a gramme is the absolute, not the apparent, weight of 1 c.c. of water at maximum density.

A very complete table of solubilities of different substances in water (both at 15° C. (59° F.) and 100° C. (212° F.) in alcohol, ether, chloroform, and glycerin, and a table of equivalents and atomic weights concludes this portion of the work.

It is needless to say that the mechanical execution of a work published in accordance with a decree of the French republic, is as nearly perfect as is possible; it forms a striking contrast in this particular—to express our unbiassed opinion—with our pharmacopœia.

Eulachon Oil—A Substitute for Cod Liver Oil.

By A. B. Lyons, M. D.,* Detroit, Mich.

THE bays and estuaries of the Pacific coast of British America and Alaska, are annually visited by immense shoals of a small fish popularly known as the candle fish, or, adopting the vernacular name, as the eulachon or outachon. This fish belongs to the family of the salmonidæ, and bears the scientific name Thaleicthys pacificus (Richardson) Girard. It is nearly allied to the capelin, which it resembles also in its habits.

The Indian name is variously spelled eulachon, eulachan, hoolacan, oolachon, ootachon, etc., and is corrupted by the English settlers at Victoria, into hoolakins.

The fish is also frequently confounded with other species, and in Oregon is generally known as smelt. Its habitat is the northern part of the Pacific ocean. In spring it approaches the shores to deposit its spawn, entering the bays and estuaries in countless numbers. It never goes far from the ocean however, although multitudes of the fish are taken near the mouths of the large rivers, particularly in Frazier's river and in the Naas.

The candle fish is less than a foot in length. It is described as having a somewhat pointed and conical head, a large mouth, teeth on the pharyngeals, and the tongue rough; the lower jaw, palatines, and vomer destitute of teeth. Its color is greenish yellow on the back, passing into silvery white on the sides and belly, sparsely spotted with dirty yellow.

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The spawning season is in April and the first half of May. During their run they furnish food not only to the Indians, but to thousands of sharks, halibut, porpoises, and other predatory fish. As a pan fish the eulachon is said to have no superior, but the fish is valued chiefly for its oil, which is used as food by the Indians. So rich in oil is the entire fish that when dried, it serves the natives for torches, whence the name candle fish. The aborigines take the fish in immense numbers by the aid of a primitive contrivance, resembling a rake or comb, the moonlight nights being the most favorable time for carrying on the operation.

The fish are submitted to a rude operation for "rendering" the oil, or they are dried, and smoked. In recent times the dried and salted fish have become an important article of export from Victoria, and there is now on the Nass river a manufactory for the oil, which has been employed to some extent in England as a substitute for cod-liver oil. It has been used medicinally to a considerable extent in British Columbia, but I do not find any record of clinical observations with regard to its therapeutic value.

Chemical analysis, of course, cannot reveal the medicinal properties of any drug. Cod-liver oil itself is an example of this. While universally accepted as an agent of singular efficiency in promoting nutrition, particularly in strumous and tubercular patients, it has thus far guarded as a profound secret the cause of its efficiency, and the reason of its superiority in this respect over other oils, vegetable or animal. It has been frequently subjected to chemical analysis, and one wonderful discovery after another announced with flourish of trumpets, each supposed, for a while, to furnish a key to the mystery, but each in turn has been abandoned, and the medical profession generally regard the remedy as nothing more than a concentrated and easily assimilated food. Iodine, phosphorus, iron, biliary acids, cholesterin, and oxide of propyl are among the constituents of the oil which have been supposed to give it its peculiar medicinal character, but none of these substances is present in a quantity sufficient to justify any such hypothesis, and one after another all have been abandoned as unsatisfactory.

Some other animal oils, however, have been found to improve nutrition in much the same way as does the familiar cod-liver oil; only by clinical experiments can we determine the value of any new claimant for a share of the honors which cod-liver oil has monopolized.

A comparison of the oils, however, may prove of interest and, possibly, even of value, should eulachon oil become a common article of commerce, whether it should prove to be more or less valuable than its rival.

The oil of the candle fish as it is sent into the market at present contains much palmitin and, probably, stearin, so that at common temperatures it is only semi-fluid.

The olein, which for medicinal purposes, at least, must be regarded as eulachon oil, forms a limpid fluid of a pale straw color and fishy odor, unlike that of cod-liver oil, perhaps, to many, less repulsive. Personally, I find it impossible to overcome my natural aversion to any fish oil; those who are less fastidious in their tastes, declare that the oil of the candle fish is positively delicious. Probably most patients would find little to choose between eulachon and cod-liver oil.

In specific gravity the eulachon oil differs from any other oil heretofore described. At a temperature of 59° F. (15° C.), water at the same temperature taken as standard, its specific gravity is 0.9071; at 77° F. (25° C.), the apparent sp. gr. is .9012, referred to same standard. The specific gravity of cod-liver oil ranges from 0.92 to 0.93, generally being about 0.927, at 59° F. Other fish oils have nearly the same range of specific gravity, and the vegetable oils which consist chiefly of olein, are only a trifle lighter, sp. gr. 0.015 to 0.920; and the same is true of animal oils, like lard oil, neats' foot oil, etc., which consist mainly of olein. Shark oil is much lighter (sp. gr. 0.870), and so also is sperm oil (sp. gr. .875 to .883). I do not know whether shark oil has been subjected to chemical analysis, but from its specific gravity one may infer that it does not consist wholly of olein, and this is known to be the fact in regard to sperm oil.

In viscidity there is a notable difference between cod-liver oil and the eulachon oil Under the same conditions of temperature and pressure, 40 parts only of the eulachon oil will flow from an orifice which will discharge 45 or 46 parts of cod-liver oil. Experiments, however, must embrace a larger number of samples than mine have done to be of much value.

When mixed with sulphuric acid (5 volumes of oil with 1 of acid) the temperature rose 55° C. (100° F.). With cod-liver oil the elevation of temperature is about double this, 112° C. (202° F.).

The color reactions with acids are quite different from those of cod-liver oil. Mixed with one-third its volume of nitric acid (sp. gr. 1.27), it develops at once a pink color, which fades slowly to amber. After 15 hours' standing the mixture is considerably thickened, and is of a deep amber color, with a reddish cast. Cod-liver oil treated in the same manner turned at first pink, faded rapidly to pale amber; after 15 hours the color remained pale amber, and the mixture was more fluid than the former, but with thickened portions partially separated.

With Cailletet's test, a mixture of phosphoric acid, sp. gr. 1.44, 12 parts, sulphuric acid, sp. gr. 1.84, seven parts, nitric acid, sp. gr. 1.37, ten parts. Eulachon oil produces at once a pink color, fading to a shade of brown; at the end of 15 hours the color of the solution was of a pale reddish brown.

Cod liver oil shows a similar initial coloration under this test, but fades to straw color or amber, if the oil is pure.

Sulphuric acid does not produce in eulachon oil the rich purple color which it gives cod liver, and other oils containing biliary constituents. It produces instead a deep brown, verging as much toward yellow as toward red.

With the elaidin test eulachon oil solidifies rapidly; after 15 hours a small portion only of the oil remains unsolidified—color of the mixture, brown. In the case of cod liver oil the action is much less rapid; at the end of 15 hours there remains still a large proportion of fluid, which is of a very dark color—resembling molasses.

The oil leaves only a trace of ash when ignited, and the constituents of this probably are unimportant. The oil probably contains, like cod liver oil, a trace

of iodine—the quantity of this element present in the latter is greatly over-stated in the books. It is altogether too minute to be regarded as of any influence, even if the iodine is present, as is believed by some, in the form of an organic compound. All fish oils have been found to contain iodine, and in proportions not much smaller than cod liver oil itself.

A portion of the eulachon oil was saponified and the soap decomposed. The fatty acids thus obtained amounted to 95.85 per cent. of the oil. As appeared subsequently, however, this is not all fatty acid.

The oil was found to contain about 20 per cent. of palmitic and stearic acids, 60 per cent of oleic acid, and 13 per cent. of an unsaponifiable substance, which is the most peculiar and interesting thing about it. This substance is of an oily consistency at ordinary temperature in summer, has much lower specific gravity than oleic acid, or any other constituent of ordinary fats sp. gr. .865 to .872 at 59° F., and seems to resemble the unsaponifiable constituent of sperm oil.

This interesting substance I hope hereafter to make the subject of further investigation to determine its chemical composition, and its behavior towards reagents. At present it is enough to call attention to its existence as a considerable constituent in this oil, and to suggest the probability that it may give to the oil properties quite distinct from those of most animal oils. The low specific gravity of the substance, and its indifference to most reagents remind one strongly of the paraffins, and now that petroleum and petroleum oil are recognized to have a positive influence in tuberculous complaints we shall not be surprised if we find that eulachon oil owes any therapeutic power it may be found to possess to this peculiar body.

Cod liver oil, it is true, does not contain anything corresponding with this substance, or if it does the quantity must be very small. Cod liver oil contains about 80% oleic acid, 8 or 9% of palmitic and stearic acids, and only 1.82% (Allen) of unsaponifiable matter, a considerable proportion of which is cholesterin.

We shall await with interest reports from competent observers of clinical experience in the use of eulachon oil, prepared to find in the new remedy a valuable addition to the materia medica, prepared equally to accept the verdict of such experience even though it prove adverse.

Medicinal Plants Used by the Cree Indians.

By Walter Spavdon, M. D.,* Weston, Ontario.

HAVING spent some six years amongst the Cree Indians on the south shore of Hudson's Bay, I carefully collected all the facts I could in connection with their treatment of disease, and submit a few of them to the readers of the Therapeutic Gazette. Among their drugs are the following:

Cornus Sericea, sprit, red willow; Indian name, Milnwapamuk. The bark of this plant is used, sometimes the bark is used whole that is in quills, but oftener in the form of scrapings. The color of the transverse fracture is whitish yellow, the inner surface light orange-brown, the outer a deep chestnut color, but when fresh it is a bright crimson. It is used as an emetic, and in coughs and fever. As an emetic it is boiled in water, a handful to a pint, and is taken a wineglassful at a time, every quarter of an hour, until vomiting is produced. For coughs, colds and fevers it is taken in teaspoonful doses occasionally. The decoction is of a bright orange color. The scraped wood is smoked with tobacco to economize the latter.

Acorus calamus, L., fire root; Indian name, Powe-men-artic. The rhizome is used. It is slenderer than the usual specimens seen, but is quite as pungent and aromatic. It is used in coughs, and as one of the ingredients in a drink brewed by the Indians from berries, etc.

Juniperus Communis L., Juniper; Indian name, Wakinakun. The bark is the part used, and is always used in a fresh state. It is prepared by taking a stick and cutting it into pieces about three inches long, and boiling it until the outer bark comes off easily, when the inner bark is scraped off and beaten to a pulp between two stones, in which state it is applied to the wound. It certainly cleans a foul wound well, which is due to its astringent properties and volatile oil, which acts as an antiseptic.

Abies Balsamia, Marshall, balsam; Indian name, Wayakask? The bark is used both fresh and dried. It is freed from the periderm leaving the vesicles exposed. The dried bark is about one line thick, has a short fracture, is of a white color. The inner surface pale brown, the outer reddish brown. It is used in coughs and chest affections. The bark is boiled in water and the decoction drunk, a teaspoonful at a time.

Alnus Virides D. C., green alder; Indian name, Nepatihe. Is used in the form of scrapings of the bark from young branches. The inner surface is pale-brown and the exterior of a greenish brown. It is used in dropsy.

Populus, poplar; Indian name, Metoos. Used in the form of strips of liber, fresh or dried; it is fibrous in texture; externally it is of a dull-brown color; the inner surface is yellowish. Is used as a decoction in coughs, about half an oz. being a dose.

The inner bark of the poplar is eaten in the spring by the Indians, and is considered to act as a mild purgative; but although I have eaten it in quantities, I have found no effects from it; it is rather pleasant in taste.

Sedum Latifolium, L. Country tea. Indian name, We-suk-a-pup. The leaves and flowers are used. The plant should be gathered when in full bloom. The dried plant has a very pleasant odor, something between tansy and chamomile; it is used as a substitute for tea, and in the preparation of a powder I shall mention further on. It used to be exported by the H. B. Co. The fresh leaves are chewed and used as an application to wounds; nearly all poultices or applications to cuts, etc., are mixed with saliva.

Pyrus Sp. Service tree. Indian name, Wetchus-y-usk-wa. Is used in the form of thin shreds scraped off young branches. Yellowish white on inside, and purplish brown on the outer. It is rather bitter astringent, and not unlike tea in flavor. It is used by the Indians in pleurisy and inflammatory diseases.

Kalmia Augustifolia, L. Bitter tea. Indian name, Karkar-pukwa. The twigs and leaves are used in

*Late Surgeon Hudson Bay Co., Moose Factory.

bowel complaints and as a tonic. A small handful is boiled in two pints of water; a teaspoontul is taken occasionally.

Padus Virginiana, L. Cherry. The bark is used, as a rule, fresh. A small handful is scraped off a young bough, and is boiled in about a pint of water; about a wineglassful is given as a dose. It is used as a cure for diarrhœa.

The powder I before mentioned, in which sedum satifolium was used, is a remedy for chafing. The rotten wood of the betula alba is taken, choosing perfectly clean and rotten pieces; these are boiled in a decoction of the sedum latifolium for about one hour. The wood is now dried, and then powdered and sifted. It is dusted on the chafed places after washing them with cold water. It is also used as a powder for new-born children. My experience is, that it is a most wonderful preventive of chafing and cure for it, when one gets in that condition. It is in universal use amongst all Indians I have come across. The above ten drugs are the commonest in use among the Crees. I must not forget to mention that the Iris Versicolor, L., is their usual purgative. Among other plants used by them are: Cedar leaves, juniperus virginiana, and galium boreale, as diuretics; actrea spicata, L., purgative; mentha canadensis, L., stomachic; solidago virgourea, L., tonic; prunella vulgaris, L., chewed in sore throats. The Indians also bleed, using a splinter of flint to open the vein. Some few other drugs than the above mentioned ones are used, but they are not in as general use.

The Neutral Treatment of Fevers.

By David W. Flora, M. D., Newaygo, Mich.

TO "The Neutral Treatment of Fevers," in your July issue, by Dr. L. L. Holcombe, of La., I most respectfully dissent. Has the doctor always practiced in Louisiana? Do the fevers of that state present one unvarying phase? Do they all have that putty-like tongue, filling the entire floor of the mouth, and covered with a thick cottony coat of a dirty yeliow or brownish color? If such have been the unvarying type of his cases, then I most heartily endorse his neutral or alkaline treatment. Who of us is not familiar with that "sour" odor from the patient when all his secretions and excretions "smell like the swill tub or the vinegar manufactory," as the doctor tersely, if not elegantly, puts it. With such a subject in hand I go with him to the length of "saturation" even, by the alkalies. I have heard the fevered patient in the intervals of delirium call for that "salty mixture."

The physiological functions need it. The chemical and chemico-vital actions cannot go on without it. Without it the nerve-force or positive electricity, can no longer be generated. The processes of depuration and assimilation, for want of the alkaloid, are also arrested. As the doctor says, only the process of oxidization, the burning up of the tissues and the septic action goes on. Just as reasonably expect to generate a current of electricity from the contact of dry zinc and copper, without the chemical solution to set up the flow.

But let us turn our attention to another class of fever cases where we have the bright red tongue denuded of papillæ, glazed and shining in the centre. Did the doctor administer to this patient his neutral treatment, his alkalies and alkaloids? If he did he must have seen that patient grow worse from day to day; the temperature rise, the tongue grow more dry and brown, restlessness, followed by sleeplessness and sub-sultus and delirium to follow.

I am sure I speak the experience of almost the entire profession, after pushing hypo-sulphites and carbonates of soda, the bromides and alkaloids.

Take such a case aggravated by the doctor's treatment and place the patient upon the *acid* treatment pure and simple, either the arom. sul. acid or the nitro-muriatic and in twenty-four hours the tongue becomes more moist, the sub-sultus and delirium subside and the temperature falls. Such has invariably been my experience, and I feel sure the majority of practitioners have verified it in their experience.

Nothing short of willful obstinacy, bigotry or dense ignorance can fail to discriminate in the pathology and treatment of the two conditions as they have been contrasted.

With all due respect to Dr. Holcombe's able *treatment* of fevers, is not his idea of fever being an entity, a tangible thing lying around loose in the system, something that you may "go for," so to speak, absurd? For example, he says *it*, that is, "soda, follows up the retreating disease and like a gallant and successful conqueror presses on the fleeing and demoralized cohorts and thus progressing, drives even the scattering guerillas of the fell army from its own bushes and fastnesses."

From the foregoing language we can not only regard fever as an *entity* but a *legion* of them. The doctor's treatment is far better than his theory and after all that is the main thing. If he had not entirely ignored the type of fever indicated by the red, glazed tongue etc., which I have roughly sketched, and had claimed for his "neutral treatment" only that which is its due, this criticism would never have been written.

However, let me say in conclusion that the number of cases in which the alkaline treatment is indicated is far more numerous in my field of observation than the opposite, as it includes about all cases in intermittent and most of the remittent. It is in typhoid and typho-malarial cases in which the indication for the acid treatment is most usually found.

Cholera Infantum.

By G. A. Williams, M. D., Bay City, Mich.

IN THE treatment of this trouble, there is very little difficulty in distinguishing it from the simpler forms of the bowel complaints. Diarrhœa from errors in diet, malaria, indiscretions on the part of the mother, etc., terminates favorably in most cases after removal of the offending ingesta. In such cases we can assist nature, by the use of a little hydr. cum creta, and afterwards reguulating the diet and surroundings. In cases complicated with malaria, of course we must use quinine combined with the aperient. If the case should assume all those severer symptoms, viz: excessive watery stools, emaciation,

with great prostration, then we know at once that we have a case of cholera infantum to deal with. This trouble occurs during the heated term,—no doubt on account of the extreme heat, teething, vitiated atmosphere and other influences, all of which combined, produce extreme debility, the most prominent symptom being indigestion to begin with, then weakness and relaxation of the whole system. Extreme heat, teething and other influences, are the exciting cause, while indigestion, relaxation and debility combine to produce the immediate cause. The same trouble, just now, is quite prevalent with adults, only less severe, the subjects being better able to bear it and better able to take care of themselves. With adults the remedy is abstinence from food to begin with, and rest with a little brandy or ginger as a stimulant, a light, easily-digested diet, with very little meat, salt smoked meat being the best if any is taken. Thus we have the benefit of chloride of sodium and creasote, as purifiers which obviate fermentation. To use the vernacular, "I have been there myself." Strange to say, the value of chlorine seems frequently to be overlooked; it is far superior to all other agents of this kind and no doubt the antifermentative properties of calomel depend on the chlorine it contains. So it is with the bi-chloride of mercury about which there has been such an antiseptic craze.

The principles to be followed out in cholera infantum are two, viz: nourishment and support. Very little food to begin with, in order to give the stomach a rest and stimulants to keep up the strength. I use brandy and water very freely from the beginning and when the little patients perceive the effect of it, they take it with great avidity. In fact I consider it more important than anything else. Milk can be used with lime-water, or prepared with pancreatic extract, according to Dr. J. Lewis Smith. The lime-water keeps the milk from curdling and seems to act as a kind of natural astringent. I also use tender raw beef, in some cases, chopped up into a fine jelly, seasoning, forming it into a little cake and warming it with a very little fresh butter, merely enough to turn it white on each side and take away the raw taste. I give as medicine, a mixture of rhubarb, soda and peppermint. Thus, for a child six or eight months old:

℞ Rhei pulv.
Sodæ bicarb., ää gr. viii.
Tr. ol. menth. pip., gtt. xvi.
Syr. simp., ʒ iv.
Aquam q. s. ad., ℥ ii.

M. Sig. A teaspoonful every two hours when diarrhœa is troublesome.

The rhubarb and soda should be rubbed together in the mortar with a little water first, to incorporate them and then the other ingredients added. This neutralizing mixture is as old as the hills, I believe, but I don't think it is generally used. The rhubarb acts as a tonic and indirect astringent at the same time, the soda being the antiferment. Chamomile tea, I have found to be of great service, all through the disease, acting as an elegant tonic and stomachic. I have the abdomen encased in a good flannel bandage with stimulating applications I never use astringents or opiates in any form, which, like the editor of the GAZETTE, I consider worse than useless. Opiates not only act as astringents, but always interfere with digestion.

Quassia as a Cure for Cholera.

BY HENRY B. EVANS, M.D. LOND., PICTON, ONTARIO.

I THINK it was about the year 1860 a formidable epidemic of cholera broke out in Bengal. All the public works were stopped, and amongst others the building of the Inuma bridge over the Ganges, and it was here that the demonstration of this simple but wonderful cure for cholera took place. When all remedies seemed to fail, and the number of deaths to be daily on the increase, it was determined to try an empirical remedy (where or how it arose is not known), which was done with astonishing success. In ten days 144 patients had succumbed to the disease, and it yet increased in pace and destructiveness. The superintendent of the works determined to try "the quassia remedy," as it was called, and he was most successful. The medicine not only acted as a cure, but also as a preventive. Twenty-four cases (bad ones), which were inoculated after the patients had been attacked, recovered. More than 600 coolies were inoculated and escaped the disease although remaining in the infected district, and not a death took place within a week.

The plan of treatment is very simple: Make an incision in the left arm, until the appearance of blood, then drop into the cut 4 to 5 drops of the tincture of quassia. So soon as the blood coagulates bind the wound up with a strip of cloth, and keep it moist. The patients were allowed only cold water and sherbet to drink. Sometimes a *mussuck* of cold water was thrown over the body and head, for the medicine is found to cause extraordinary heat in the body, and this refreshed the patients much. The treatment was endorsed by reliable journals, as the Allahabad Gazette and the Northwest Gazette. How is this? Did some simple Hindoo stumble on an apology for the hypodermic syringe of late years—did he, in a rough way, anticipate the discovery of Koch, and send his antidote right into the blood,* to strangle the cholera microbes in their element? There is something strange, too, about this simple drug. It is strongly antiseptic; an infusion of it will keep longer than that of any other vegetable. Discovered by Quassia, a negro, in the West Indies as a cure for the fevers of that climate, and named after him, it seems deserving of a more extended notice. A cup made of this wood retains the property of rendering water bitter in it by immediate contact, and we know that it is a fatal fly-poison. I write this to the GAZETTE, knowing that it has an earnest and diligent array of readers, who, I am sure, if an opportunity offers, will investigate the action of this medicine in cholera and other kindred diseases, where it may be equally useful, both as a cure and prophylactic.

[* Unfortunately for this supposition, cholera microbes have not yet been discovered in the blood. Koch declares emphatically that they do not enter the blood, and that they cause their effects through local action on the intestinal mucous surface. ED. THER. GAZETTE.]

Neutral Treatment in Fevers.

By C. K. Patterson, M. D., Fort Scott, Kansas.

IS fever a disease? From the reasoning of Dr. L. L. Holcombe (see Ther. Gaz., July, 1884), he must think so. Fever is only to disease, what the blossom is to the fruit. You say apple-, peach-, pear-, blackberry-blossom. Can cinchona alkaloid, gelsemium or arsenic neutralize the alimentary canal? Is the theory sound, fever originates by organic germs? If so, the boy makes the daddy. How does medicine cure disease? If it does not cure by expeling an enemy, how does it do it? "The great genius of Broussais, Brown, and Rasori may have lit the first sparks that have thrown refulgent light upon the cause of fevers." I, for one, fail to see the light. If acids are prejudicial to fevers, how comes it that butter-milk *seems* to cure fever after the M. D. says the patient must die?

If you please, take one of those marked cases. Stop all treatment by medicine, give nature a chance. Wash the patient off every hour, and see how soon she will right herself without the antipyretic. Nature loves kindness. Give her milk, and if she hungers, give her more milk. Soon exosmosis will be established, congestion relieved, and the "germs" destroyed by a few doses of hot water, drunk at intervals of 15 to 30 minutes, until a few tea cupfuls are consumed. The germs are drowned, congestion annihilated, and a wonderful, beautiful result—patient cured. Give heroic doses, saturate the system with hot water, the more the better for the first 12 hours, if a bad case. Hot water will as certainly destroy fever, as water will put out fire. Try it, doctors.

As to the bath: "1 lb. bicarbonate soda, 4 or 5 gallons water." If nature did not protest and rebel, you might have quite a batch of soap, but she don't propose to be soaped, rises in her might, throws off soda, and there is the enigma: Bicarbonate of soda—Soda, 1 part, 31.3; acid, 2 parts, 44.24; water, 1 part, 9. Properties (medical): Antacid, antilithic. Gelsemium: Febrifruge, subduing fever in from 2 to 20 hours. Spirits, nit. ether: stimulant, antispasmodic, diuretic, diaphoretic. Ginger: Stimulant, rubifacient, errhine, sialagogue. Peppermint: Diffusible stimulant, antispasmodic, carminative, stomachic. In this formula what antidotes fever? Gelsemium. In ʒ j you have enough medicine to cure several cases of fever, homœopathically. Query: If bicarbonate of soda cures fever, why impose on nature with quinia, and acid as tonic? Why not trust nature and give more milk? In the article of Robert Meade Smith, a few lines strike at and get the kernel. "No one will claim that all physicians are scientists, but too many are mere therapeutic machines, applying by rote, in their practice, standard remedies to given diseases." Amen!

Eczema Papulosum.

By B. F. Records, M. D., Platte City, Mo. (Late of Liberty, Mo.).

THIS disease appeared during the "late unpleasantness," to a very annoying extent. In the armies it was called "Army Itch." Among civilians "Prairie Digs," "Illinois Itch," "Missouri Mange," etc. During the last year and a half it became prevalent in some of the western counties of Missouri, and especially so in Clay County. In 1865, I had tried to cure a large number of cases, and only partially succeeded, when I hit upon the following in October, 1865, with which I cured twenty cases without a single failure, and published it in the Medical and Surgical Reprter, vol. 15, page 105 (to which I refer the reader).

℞ Sulphur flor., ʒ ii.
Cupri sulph., ʒ i.
Hy. ox. rub., ext. aconite rad., ää ʒ ss.
Adipis, ʒ ii.

M. Sig. Rub on twice daily for three days, then wash and put on clean clothing.

Now, within the last two years, I think I have cured over one hundred cases, with never a failure yet.

I now insist on having the patient wash thoroughly with hot soda water, before and after the use of the remedy. I say, from considerable experience, that *internal medication is perfectly useless in the disease I allude to.* It may please the patient to be taking something, but common water is as good as anything.

Turpentine in Diphtheria.

By W. H. DeWitt, M. D., Cincinnati, Ohio.*

THE article in your last issue on the use of turpentine in Diphtheria prompts me to give my experience with the drug. I have used it now about one year, as the druggists in this locality will attest. During this time I have had no deaths from the dreaded disease. My attention was first called to it by a very competent German pharmacist, Mr. Listz. It has been my custom to administer it in the form of an emulsion, as follows:

℞ Ol. terabinth., ʒ iv.
Ol. amyg. exp., ʒ iv.
Pulv. gum arab.
Pulv. sacch. alb., aa q. s.
Aq. cinnamomi, q. s. ad ʒ ij.

M. S. One teaspoonful every four hours.

At the same time I have directed the throat to be penciled every two hours with the pure turpentine. Ordinarily no unpleasant symptoms arise from this plan of treatment. A very decided change will be noticed in the appearance of the membrane in a very few hours after commencing treatment. I have rarely found it necessary to resort to stimulants. Good nourishing food is all that is required in most instances.

Witch Hazel in Venous Hæmorrhage.

By Will D. Christy, M. D., Afton, Iowa.

I NOTICE two short articles in your last number on the use of hamamelis, or witch hazel, in the treatment of varicose veins and menorrhagia, and am surprised to see this old and truly good remedy spoken of as something new. I know of no other remedy that has the property of being comparatively harmless, and yet so potent in relieving so many different derangements of the vascular system. It is the only true venous tonic in our materia medica, and has the power of controlling hæmorrhage of a

* Late of Longview Asylum and Cincinnati Hospital.

venous character beyond any remedy I have ever tried. Last fall I had three cases of typho-malarial fever that had hæmorrhage from the bowels, and the witch hazel was the only remedy used for that trouble. I gave the distilled extract in teaspoonful doses every hour for two or three doses, and then three times a day until all danger of a recurrence was past. In no case was there any loss of blood after the second dose. I have used it frequently for the hæmorrhage following abortion, and, in fact, put more faith in it than in ergot or lead and opium, in such cases. As a local application to contusions it has no superior. I have tried the fluid extract several times, only to be disappointed, and now rely solely on the distilled extract.

Translations.

[All articles signed "T" are translated for THE THERAPEUTIC GAZETTE by C. W. Tangeman, M. D., Cincinnati.]

Examination of Erythrophleine, the Active Principle of Sassy Bark.*

(*Continued from page 356.*)

We shall endeavor to briefly give the chemical and pharmacological peculiarities of erythrophleine. The free erythrophleine is obtained in the form of a thick, yellow-tinged syrup, of a plainly alkaline reaction. The base is scarcely soluble in water, but is easily dissolved in alcohol, ether, amyl-alcohol, and acetic ether, while it is insoluble in petroleum ether and benzol.† The experiments to obtain erythrophleine in the form of solid crystals, by precipitating an ethereal solution with petroleum ether, did not succeed; also in this case the base was again separated in syrupy form. Diluted mineral acids dissolved the alkaloid very easily, by combination therewith into salt. The aqueous solutions of the latter are clear, but turn gradually turbid, or become at least opalescent, when small quantities of a peculiar product of decomposition of the base were added. By shaking the neutral or slightly acidulated solution with ether, this turbidity is easily removed.

The salts of erythrophleine could, the same as the free base, also be obtained only in the form of clear syrups, which became brittle on drying down, and which showed no trace of crystallization§; also the salicylic salt of the base was obtained only in the same form.

From the solution of the salt through the so-called alkaloid reagents, there are obtained the well known, white or yellow precipitates, namely, with phosphor. wolframic acid, phosphor-molybdenic acid, tannin, potassio-mercuric iodide, etc. The precipitate obtained with this latter reagent form a solid mass in alcohol, but is scarcely soluble therein. By triturating these precipitates the base or its simple salt could always be regained in the above-mentioned form, particularly if decomposition had not taken place.

Solutions of the erythrophleine salts in water show the characteristic precipitates with platinum chloride or gold chloride. These double salts are scarcely soluble in water, but unusually soluble in alcohol. The platinum salt is difficult to dissolve in alcohol ether. The gold salt is immediately decomposed upon boiling in water. From their solutions in alcohol, diluted to the limit, these double salts always separated only in the form of a heavy, clear syrup, though decomposition with sulphide of hydrogen, the erythrophleine can again be obtained in its original form.

From the watery solutions of the erythrophleine salts, the base can be completely precipitated by fixed or carbonic alkalies. The precipitate, flaky in the beginning, forms at once into a resinous mass, which has a distinctly alkaline reaction, and which possesses the above-described qualities of free erythrophleine. Boiled with alkalies, however, gradual decomposition takes place.

Erythrophleine is a substance that is peculiarly easily decomposed, the evaporation of solutions which are not thoroughly neutral being even sufficient to cause a partial change. This is, perhaps, also the reason why in the original preparation of Merck, there was found, side by side with the base, a not inconsiderable quantity of the products of decomposition.

We succeeded in making a more intimate acquaintance with these products of decomposition in erythrophleine, which appeared to be of interest in different directions. For this purpose it is best to boil the erythrophleine with strong hydrochloric acid on a sand-bath, though even during boiling with alkalies there appears to occur an equal decomposition. Soon after the beginning of the boiling the solution is colored yellow* more and more, and gradually there separates, in increasing quantity, a brownish substance which is insoluble in the acids. The latter will form into resinous masses, which become hard, clear, cold, brittle and capable of being pulverized. This substance so abundantly formed, has a distinctly acid character, and, therefore, can be called erythrophleic acid. The substance is free from nitrogen,‡ soluble in alcohol and ether, hard to dissolve in water and diluted acids, and soluble in fixed or carbonic alkalies. From the latter solution it is precipitated in the form of whitish-yellow flakes. The alcoholic solution of the substance has a freely acid reaction; if the former is carefully evaporated the acid separates, at least partially, in a crystalline form. This product of decomposition evidently forms a part of the preparation which was called "glucoside," and was also contained in Merck's erythrophleine. It can be easily separated from the original base if the latter named preparation of Merck is dissolved in a small excess of acid, and the turbid solution is shaken with ether into which the erythrophleic acid passes

*By Erich Hanrack and R. D. Zabrocki, in the laboratory for physiological chemistry and pharmacology, at Halle.

†The statement of Gallois and Hardy, that the free erythrophleine is only slowly soluble in ether, is, according to our experience, not quite evident; as far as the rest is concerned, our observations of the relations of solubility of the base, agree with those of the authors named.

§Though Gallois and Hardy state that they have observed in some combinations, indications of a crystallization, we are, nevertheless, led to believe that they were deceived; for in spite of all endeavors, we could never observe such indications.

*With reference to the coloring reaction of erythrophleine, Gallois and Hardy state that it is colored violet (?) with permanganate and sulphuric acid, but that the coloration is not very intense. With bromide of potash and sulphuric acid, we could cause a fleshy red coloring, which gradually became dark-brown.

‡This fact has not been proven by elementary analysis, but only through the negative result of the nitrogen test.

over. From the remaining aqueous solution the erythrophleine is then precipitated with caustic soda. The slight turbidity of the aqueous solution of the erythrophleine salt so frequently observed is caused by the presence of small quantities of the acid of decomposition, which, perhaps, also form gradually if the solution were allowed to stand a longer time. At all events, it appeared to us as if the efficacy of the latter had decreased somewhat in time.

Pharmacologically the erythrophleic acid shows no remarkable actions; very large doses seem to cause in frogs quite feeble signs of paralysis, but the effect soon passed off and the animals completely recovered.

In subsequent boiling of the erythrophleine in muriatic acid, the erythrophleic acid precipitated in a soluble condition was separated from the yellow solution, and shown to reduce oxide of copper in alcoholic solution. We do not, however, like to believe that it is here a question of the splitting up of sugar that, and therefore, the erythrophleine would have to be regarding as a basic glucoside, for if it is not boiled with muriatic acid very continuously in such a manner, it remains undecomposed. The reducing effect is much stronger when the boiling is continued until all the erythrophleine has been decomposed. In the lattet case scarcely any further reduction can be observed. The oxide of copper also did not appear to us to remain as completely dissolved in the gold, as it did in the presence of glucose in an alkaline solution. There seems, therefore, to be here the question of a formation of intermediary products to which a reducing action can be ascribed. The question will be more definitely decided as soon as it becomes possible to work with larger quantities than we have at our command.

Since erythrophleic acid, which has been formed as a product of decomposition in very considerable quantity, is free from nitrogen, there comes up the question in which form the nitrogen of the erythrophleine is retained in solution after the decomposition. After the boiling with muriatic acid had been ended, and all the erythrophleine was decomposed, alkalies caused no more precipitate in the yellow colored solution; but as soon as the latter had become alkaline a peculiar smell, similar to that of nicotine, was noticed, reminding us of volatile base. In fact there was found in the solution a basic product of decomposition which we will designate at present as manconin (after the French name of the bark). The platinum salt of the same is rather easily dissolved in water, but with difficulty in alcohol and ether, and can be produced from watery solution in a crystallized form. It is to be regretted that this base is obtainable only in a very small quantity, so that a considerable quantity has to be worked upon, in order to examine it chemically.

As regards the action of manconin, experiments on frogs (esculenta) shows that the action reminded as well of a nicotin as of a pyridin action,* without, however, being completely harmonious to one or both. At first it was remarked that the substance, in quantitative respect, is not so effective, which is also the case with pyridin. The symptoms depend principally upon an affection of the general nervous system, and symptoms of excitement and paralysis are combined therein. At first the psychical excitement of the animal is observed, then gradually the arbitrary movement ceased, whilst the reflex excitability was unusually active. The slightest tactile irritation caused vehement convulsions of single muscles, and groups of muscles, which increase almost to tetanic spasms. Since, however, the paralysis progressed quickly from the central nervous system, that stage pretty soon ceased. Convulsions as a consequence of irritation of the medulla, could not be observed. In the heart of a frog the action is quite analogous to that of nicotine; at first, there is observed a paralysis of the vagus endings, not of the proper inhibitory centers, and later the heart itself is paralyzed, which at the same time is peculiarly empty and collapsed. According to its action the base designated as manconin might thus come under the nicotine group.

Thus we have found out that erythrophleine, on boiling with acids or alkalies, furnishes the following products of decomposition: 1st, an acid free from nitrogen; 2d, a volatile base. The relations seem, therefore, to be very analogous to those of atropine, which under the same circumstances, as stated, is split, as is well known, into tropa acid and into the basic tropin. A further and more detailed examination of the products of decomposition of the erythrophleine in chemical respects, will, no doubt be of no small interest. The main difficulty will be in procuring sufficient quantities of the very expensive material; it will be easiest to find out the composition of erythrophleic acid. At all events, at present it can be stated that erythrophleine, which in a certain measure combines in itself the principal actions of digitaline and picrotoxine, furnishes two products of decomposition to which neither the one nor the other of these actions can be ascribed.

If it is permissible to form presumptions about the nature of our substance, it might be assumed that the base, the erythrophleine, is of a complexed composition. In the molecule there is, perhaps, as a side group a complex of atoms which are free from nitrogen, and which cause the digitaline action and furnish the product of decomposition, the erythrophleic acid. In a certain measure the main trunk of this molecule is formed, perhaps, by a substituted ammoniac, on which, perhaps, the picrotoxin-like action of the base is dependent, and which, on decomposition, splits off in the form of a volatile base, to which, however, in no manner can the same action be ascribed. It is not impossible that through chemical examination of the products of decomposition certain disclosures about the structure of erythrophleine will be found. However, a further possibility should be taken into consideration: It is imaginable that the picrotoxin-like action of the substance is caused by a product of decomposition which has been formed in the body, which, therefore, would not be identical with the two products of decomposition obtained outside of the body, and which we have above described.

From a pharmacological point of view it appears of particular interest to determine how the two, so very different, actions of the same substance are combined in the animal body, and how they harmonize.

The erythrophleine which we used for our experi-

*Compare Harnock and Myer, Archives for Experimental Pathology and Pharmacology, Leipsic. Vol. 12, page 394, FF.

ments had been isolated out of the original preparation by different methods; we were desirous of establishing the fact that the preparations made by different methods, should agree fully, as far as their action is concerned. Because of this desire we never obtained a preparation which caused exclusively the action of digitaline or that of picrotoxin. At times we used such preparations as were obtained by decomposition of the gold salts, or by treating the precipitate of potassiomercuric iodide with alcohol, etc., and again we employed the base which was carried over in ether, the residue, after the evaporation of the ether, being dissolved in hydrochloric acid from the fetid solution, and the base being precipitated with caustic soda, washed-out and again redissolved in a sufficient quantity of hydrochloric acid. Instead of the ether different mediums of solution were also used for the extraction of the base from the original preparation.

The manner of action is exactly the same in cold- and warm-blooded animals. In frogs, that is to say, such as were freshly caught in summer, ½ milligramme (gr. 1-120) of erythrophleine, is sufficient to cause the characteristic symptoms in the heart up to the arrest of systole. In old or winter frogs, and with esculentæ one to two milligrammes (gr. 1-50 to 1-30) are usually required. We need not delay with a description of the symptoms, which conform so completely to those caused by digitaline. After an increase of the strength of the systolic contractions, the so-called heart peristalsis appears, which we at times were also able to observe quite distinctly at the ventricles, and then arrest of the heart in systole takes place. If, according to the methods of experimentation given by Schmiedeberg, the ventricle is extended mechanically through an increase of the inner pressure, renewed contractions taken place; finally the heart muscles succumb to paralysis.

The result of some experiments made on the heart of a frog with erythrophleine we give below in tabular form.

As far as the muscular paralysis in frogs is concerned, which is also in part a symptom of digitaline action, the action seems to have been distinctly observed also here, but it is masked at the same time by the effects of the action which reveals itself in the appearance of convulsions.

The digitaline-like action of erythrophleine reveals itself also very distinctly in almost all the ordinary functions. It is true that same cannot be quite readily observed as a result of the hypodermic application of the remedy, because quite small doses do not act quickly enough, and larger doses cause convulsions too quickly. We only succeeded in the case of the dog, with a repeated hypodermic injection of small doses, in gradually observing almost the whole complex symptoms of the digitaline action. For this purpose the animal received daily a dose of about three milligrammes. In addition to the characteristic symptoms at the heart, vomiting, muscular weakness, etc., were especially noted. Looseness of the bowels could also be observed in the cat. The prevention of the appearance of cramp by means of curara, or the inducing of a deep chloral-narcosis, the hypodermic application of a larger dose, will produce the whole process of "digitaline action" in the heart, and the animal dies, in consequence of heart paralysis, while in animals which have not been curarised, death appears much earlier in consequence of the spasms.

No.	Species of frog.	Doses in mgms.	Appearance of so-called peristalsis after minutes.	Appearance of the incomplete arrest after minutes.	Appearance of the complete arrest after minutes.	Remarks.
1	R. temp. summer frog.	2	5	12	18	No complete arrest.
2	" " "	2	5	10	20	" " "
3	" " winter	2	5	12	20	The action becomes again norm.l.
4	" " esculentæ	2	7	13	: :	" " "
5	" " temp. summer	2	13	25	99	Peristaltic changes with incomplete heart action.
6	" " escul.	1½	5	16	33	" " "
7	" " temp. summer	1½	7	16	30	No complete arrest.
8	" " "	1	5	11	55	No arrest at all.
9	" " "	1	8	16	52	No arrest at all.
10	" " winter	1	7	16	: :	" " "
11	" " "	1	10	15	: :	No effect at all.
12	" " "	1	8	: :	: :	" " "
13	" " "	1	10	: :	: :	
14	" " "	1	13	: :	: :	
15	" " summer	½	10	14	95	
16	" " "	½	11	30	: :	
17	" " winter	½	15	: :	: :	
18	" " summer	½	19	: :	: :	
19	" " "	½	30	: :	: :	
20	" " winter	½	: :	: :	: :	
21	" " "	½	: :	: :	: :	

The digitaline-like action of erythrophleine is particularly noticeable in mammalia, when a very small quantity (say a milligramme in the case of rabbits) is injected directly into the blood. There then appears, in the first stage of action, the retardation of the heart's action, the strengthening of the systolic contractions and the increase of the arterial blood pressure. If larger doses are injected, the effect is naturally a different one, accordingly as the animal is curarized or not. In the former case the digitaline-like action proceeds in the well-known manner: The pulse beats more frequently; the blood pressure in the arteries decreases, and the animal dies from heart paralysis; while in the latter case the appearance of convulsions ends life much earlier. In these experiments we could readily observe how the retardation of the heart's action occurs in consequence of the digitaline action in rabbits. The above-mentioned small doses (each 1 milligramme) produce the same effect in the most pronounced manner—in such a way that the frequency was reduced one-half; after other doses (3 to 5 milligrammes [gr. 1-20 to gr. 1-12]) the retardation was not very considerable, and was soon followed by acceleration. A very large dose (10 milligrammes [gr. 1-6]) injected at one time, produced heart paralysis (in curarized animals) so quickly that the retardation could not be observed at all.

Under the same circumstances in which, for in-

stance, digitoxin in animal dose (gr. 1-60) was given, we could not observe from erythrophleine any local effect at the point of application, when hypodermically injected, there being more of the well-known phlegmons and suppurations which follow this use of the former. It appears, also, that those members of the digitaline group which are readily soluble in water, as they are more quickly absorbed, do not cause the same degree of local inflammatory effect. That erythrophleine, however, like any member of the digitaline group, is able to act locally, is evident, independently of any reference to the symptoms in the digestive tract; the violent irritation of the mucous membrane of the nose, which is caused by the bark as well, the alkaloid, in the form of a powder, attests its irritant properties. This fact has been also mentioned by Gallois and Hardy.*

The picrotoxin-like action of the erythrophleine conforms throughout in frogs and in mammalia. In frogs, and especially in the esculentæ, generally two millimetres (gr. 1-30) is sufficient to cause this action. In the case of rabbits, five milligrammes has a positively lethal effect. In consequence of the spasms which are induced in dogs, somewhat larger quantities are required.

The manner in which the spasms appear reminds us forcibly of the picture of a picrotoxin action. In frogs there appears first the state of paresis, and the animal is generally much bloated; then the frog generally utters its characteristic croak-reflex,† and clonic cramps take place, when opisthotonus appears, and the animal returns to its natural size.

A certain deviation from the picrotoxin action may, perhaps, be found in the fact that the spasms caused in frogs by the erythrophleine, quite regularly and very speedily change their character and become more tonic. Nevertheless, only an action on the medullary centres can be noted. The removal of the cerebrum and of the lobi optici is followed by no change in the symptoms, but as soon as the medulla oblongata is removed, the cramps cease completely.

With the action of pyridin, which is on the whole very similar to that of picrotoxin, but in addition, the excitement of the motor nerve-endings, appears in such a manner that some twitching continues for quite a time, even after the destruction of the medulla spinalis.

The effect upon the vagus center in the medulla as caused by picrotoxin, could not be observed in experiments with the erythrophleine, probably owing to the simultaneous digitaline action on the heart. In the case of frogs after the stage of spasm, paralysis is gradually developed, by which, also, as we remarked above, the striated muscles are affected. In this manner, then, death gradually occurs. We have observed that the introduction of relatively large quantities of erythrophleine in the case of young frogs, causes immediate paralysis without the previous appearance of spasm. Smaller doses, however, act on these in a quite similar manner to that of picrotoxin.

The onset of spasms in mammalia is quite analogous to their appearance in the frogs: After a state of paresis the animal becomes more and more restless, and there occurs an attack of extremely violent convulsions, which shows the whole typical picture of picrotoxin action—the peculiar swimming motions, trismus, opisthotonus, spasms of the muscles of the eyes, etc. Only in rabbits we sometimes observed that the convulsions, as in frogs, assumed towards the end, more the character of a tetanus, the abdomen being extremely distended and all muscles being firmly contracted. The death of the animal occurs rapidly or slowly, according to the size of the dose, in consequence of suffocation, while the heart-beat outlasts for a while the arrest of respiration. Sometimes the heart-beat is very marked on account of the simultaneous digitaline-like action. If artificial respiration is resorted to, the symptoms extend over a longer space of time. A relaxation of the convulsions occurs in the meantime, which is again followed by new attacks.

That the respiratory center is directly affected by the erythrophleine, independently of the appearance of cramps,* could be observed by that arrangement of experiments in which the animal had been previously brought into a deep chloral-narcosis, and in which the respiration was recorded with the assistance of Mayer's tambours. Following the introduction of the erythrophleine, the respiration grew more frequent and assumed a more and more dyspnœic character. In this respect, also, the action of this substance corresponded with that of picrotoxin. Those partial symptoms of the picrotoxin-like action which occur at the heart and in the circulatory system do not, perhaps, appear so directly, on account of the simultaneous digitaline-action of erythrophleine.

We believe, therefore, to have demonstrated that both actions which in themselves are of such a definite different nature, occur here side by side, an observation which might justify a continued examination of the chemical properties of the alkaloid which has here been taken into consideration. A base which in the animal body caused two groups of effects, which apparently are quite independent of each other, and which heretofore have been observed only on the part of substances that are free from nitrogen, may well be accounted as one of the most interesting of its kind. Besides, the erythrophleine is effective in quantitative respects. That the substance is a mixture of two bases is decidedly contra-indicated by the observations made by us heretofore, though we may willingly admit that an absolute assurance with reference to this question, can only be arrived at after at least the empirical formula of the erythrophleine has been fixed by an elementary analysis.

On account of its digitaline-like action, the erythrophleine would not, very likely, be well adapted for a practical therapeutic application. As we remarked above, quite small doses hypodermically applied do not cause this action quickly enough; and when large doses are given the danger of the appearance of its spasmodic action would be too imminent. —*Archiv für Experimentelle Pathologie und Pharmacologie.*

* We desist from communicating at this place a protocol of the experiments, because the essential part is to confirm an already known action in all its important points. Besides this, the experiments have been given in detail in the previously mentioned dissertation by R. Zabrocki, to which we herewith beg to refer. The more remarkable facts have been rehearsed in the above argument.

†Boehm, Archiv. für Experimentelle pathologie und Pharmacologie, vol. 3, p. 222.

*Compare also Sée and Boshe-Fontaine L. C.

New Glucoside Discovered in Boldo.

Boldo, Boldoa fragrans, introduced into France in 1868, has been long employed in Berlin as a remedy in affections of the liver. In 1874 MM. Burgoine and Verne isolated from the leaves a substance having feeble alkaline properties, which they named "Boldine." There is no doubt that such an alkaloid exists in the plant, but its physiological properties are so little marked, and the quantity of alkaloid contained in the leaves is so minute—one four-hundredth of one per cent—that I have been led to seek for some other constituent in the drug, which might afford a better explanation of its medicinal activity. This research I conducted in the laboratory of M. Rigaud, at Venilly. The leaves of Boldoa were exhausted with alcohol, the solution evaporated, and the residue treated with water slightly acidified with hydrochloric acid. The alkaloid being thus completely eliminated, the solution, which was nearly free from mucilaginous matter, was shaken with ether or chloroform. On evaporation of this solvent there remained a syrupy substance, transparent, of a pale amber color, with an aromatic odor and taste. This substance is carried over with the vapor of boiling water, but it cannot be distilled without decomposition in a vacuum or in a current of hydrogen. One kilogramme of boldo leaves will yield about three grammes of the substance. The following are the results of an elementary analysis:

	Found.	$C_{30}H_{52}O_8$.
Carbon	66.9	66.7
Hydrogen	9.8	9.6
Oxygen	23.3	23.7

This substance belongs to the family of glucosides, for if it is heated with hydrochloric acid a long time it is split into glucose, methyl chloride, and a syrupy body soluble in alcohol and benzine, but insoluble in water. Ultimate analysis of this compound gives:

	Found.	$C_{19}H_{28}O_3$.
Carbon	74.8	75.1
Hydrogen	9.4	9.2
Oxygen	15.7	15.7

The solution of this body in benzine is attacked by sodium with evolution of hydrogen, and this sodium can be ethylized or methylized by treatment with ethylic or methylic iodides. The glucoside is undoubtedly an ether in which the glucose plays the part of an acid. As to the combined alcohol, the methyl free derivative of which has the formula $C_{19}H_{28}O_{31}$ as shown above, is this an alcohol or a pseudo alcohol? The small amount of material I have at my disposal, and the costliness of the drug do not permit me at this moment to settle this question.

Dr. Laborde, who has commenced a physiological study of this glucoside has concluded from a series of experiments that one of the principal effects of this subject, if introduced into the organism, either by hypodermic injection (in guinea pigs) or by absorption from the stomach (in dogs) is to produce rapidly, and with no untoward symptoms, a tranquil sleep, varying in duration according to the dose, and from which the animals awake in a natural manner, and then, without appreciable change in their state of health, take up their ordinary life, and have their ordinary appetite.

Dr. Laborde has also observed that this substance, administered by hypodermic injection to dogs, excites the different secretory functions, especially the biliary secretion and excretion, increasing also the activity of the salivary glands and of the kidneys.

Messrs. Rigaud and Dusart state that in later experiments Dr. Laborde has observed that if the glucoside is given to a dog, the urine soon becomes green, a fact that seemes to demonstrate the influence of this agent in increasing the biliary secretion.—(M. P. Chapoteau, in *Transactions of the Academy of Sciences of Paris.*)

Migraine Pencils.

Originally migraine pencils were put upon the market in the shape of a pencil, made of pure methol, set in a small wooden box. This menthol can easily be purchased upon the market.

The price lists of druggists quote it as oleum menthæ, piperitæ, japonicum crystallizatum. It has a strong smell, recalling that of peppermint, and causes, if applied to the skin, an irritation which reminds us of a sensation of coolness. This apparently cooling effect has led to the use of menthol as a remedy for migraine and similar ailments, with results which seem to justify this application. Without discussing in detail, however, the question whether the effect, apparently produced, namely, relief of pain, is really reached through the application of this migraine point, I deem it important to call attention to the qualities of this article as placed upon the market. In the advertisements of pharmaceutical journals, we see that many firms offer migraine pencils, one quoting at a cheaper price than another. Those who are induced to purchase by the low price, in this as in many other cases, find themselves generally deceived in regard to quality.

As these pencils can be made without difficulty from pure menthol, and as this body alone possesses the qualities indicated, on account of which menthol has been manufactured into migraine pencils, any addition of foreign substances which have not the same quality as menthol, and which do not impart any desirable properties to the menthol pencils, is absolutely superfluous, and can only have the purpose to adulterate the menthol for the sake of reducing the price. Every such adulteration, reducing the properties of the active ingredient in the pencils without in any way improving their quality, can only be regarded as a fraudulent adulteration, and the buyer who knows nothing of such adulterations is unquestionably "deceived," to use no stronger expression.

Any one who wishes to protect himself against such deception should see that the pencils he purchases are made from pure menthol. The pencil can be examined in the following manner, and it will take only such slight quantities of menthol to make the test that the loss of material will scarcely be noticed:

Scrape off from the migraine pencil, which should have a crystalline appearance, and not a chalky whiteness, a small quantity by means of a knife. In doing this the pencil must give you the impression of a salt-like hardness and brittleness: It should not appear wax-like and fatty. The part scraped off may be placed in a very small glass tube and introduced into a bath of diluted sulphuric acid to determine its melting point (see Pharm. Centralhalle, 1882, page 530). The melting point should not be above 38° C. (menthol melts at 36° C.). The melting must take place

suddenly through the whole of the mass, and not gradually, one part melting after another. Through this determination of the melting point the absence or presence of any adulterant can be readily determined. The little particles must dissolve immediately unless a paraffin has been used which melts at a very low temperature. This adulteration can be determined by throwing a few of the particles scraped off into some alcohol. If the menthol is pure they will dissolve immediately, or at least, on gentle agitation. Paraffin will remain undissolved.

In making the above mentioned very simple tests we can protect ourselves from all adulterations in migraine points, which we are sorry to say, are very frequent.—Dr. E. Mylius, in *Zeitschrift des Allgemeine Oesterr. Apotheker Vereins, Vienna*, June 20th, 1884.

Phosphorus in the Treatment of Rachitis.

Quite a number of years ago Wegner published his observations with phosphorus on the process of ossification. Small quantities fed animals that are growing show a formation of their layers of bone quite compact. The idea of employing this agent for that purpose in therapeutics was suggested at once. Since then all text-books on the subject of rickets recommend phosphorus, while no one ever applied the remedy extensively or made it a thorough study.

Kassowitz, who has thrown a great deal of light on the rachitic process in his studies, has also undertaken to prove the real value of phosphorus, clinically and experimentally applied. The result has shown that our ideas concerning the rachitic process were not altogether right. K. has shown that it is not due to the want of this inorganic material in the blood, but to an inflammatory hyperæmia and increased formation of blood vessels in the osseous tissue, thereby hindering and in some places preventing entirely the deposition of the lime salt from the blood. In verifying the experiments of Wegner, K. has found that only very minute doses cause an increase in the deposit of inorganic matter, while larger doses bring about an artificial rachitis. Clinically these statements can be verified, and the basis for treatment is, therefore, to use only small doses of phosphorus. Larger doses do not hasten the process one bit. K. claims that for children ordinarily one-half milligram for each day is sufficient. He employs the following formulas:

℞ Phosphor. 0.01.
Solv. in Ol. amygd. 10.0.
Pulv. gum. arab.
Syr. simpl., ana 5.0.
Aquæ Dest. 80.0.

M. S. This emulsion is well borne, but it does not keep very well, especially in warm weather.

The unpleasant smell and eructations of phosphorus are avoided by the following combination:

℞ Ol. amygd. dulc. 70.0.
Phosphori 0.01.
Pulv. Sach. ʒ iii.
Etheris fragrarum gtt. x x.

The experience of K. on this subject is quite extensive. He has treated 800 cases, and his conclusions are briefly about as follows: Phosphorus should not be called a specific in the above disease, but it is an agent that acts directly on the disease by changing the anatomical constituents of the structures. All the symptoms of rickets that are so manifest disappear rapidly under a course of this treatment, especially the changes in the cranium and spinal column.

If the claims of K. can be verified, which we can hardly doubt, the treatment of rickets with phosphorus indicates the progress of modern therapeutics. It certainly would be desirable if the practitioners throughout the country will carefully make some observations on this subject.—*Berliner Klinische Wochenschrift.* T.

Resorcin in the Treatment of Intermittent Fever. By Justus Andeer.

A large number of cases have been reported treated with resorcin where the cause was malaria, especially intermittent fever. Some authors report excellent results, while others, or possibly the same observers in another case, report absolute failure of the remedy. Knowing this diversity of opinion, the report of the following interesting case on the positive action of resorcin may be of interest. A schoolteacher, about 50 years of age, while giving me his history informed me that during the last ten or fifteen years he has been so unfortunate as to be compelled to teach and live in buildings that were situated near a cemetery. As a result of breathing the mephitic and impure atmosphere, especially before every change in the weather, he would lose all energy, become despondent and weak. Later, such symptoms as loss of appetite, chilliness, insomnia and an oppressive feeling in the left hypochondrium, became associated with those already mentioned, and not unfrequently he was confined to his bed. The disease in this instance was not recognized by the physicians until a certain regularity became manifest as to the time of the appearance of those symptoms, then the diagnosis of intermittent fever of the quotidian type was made. Quinine, which had been given frequently and in large doses, had little more effect than to still more disturb digestion. The oppressive feeling in the hypochondriac region indicated dilatation of the stomach and enlargement of the spleen. Patient often complained of vomiting, therefore the stomach was washed out twice with a solution of glauber salt. After this he felt somewhat improved, but not until the stomach was washed out with a five-per-cent and ten-per-cent solution of resorcin did the quotidian type of the disease disappear for a few weeks. All treatment had purposely been suspended and in the course of two or three weeks the patient had a return of the fever, though not as persistent and severe as formerly. He now received during a whole week resorcin in powder and in solution in increasing doses from 1.0 to 5.0 grammes; after complete recovery, treatment was continued in small doses in wine for a few weeks. According to a dispatch sent me by the patient recently, he has been and continues to be in good health, although two years have passed since he was under my care. It is worthy of notice in this case that the patient had been treated in the best hospitals and summer resorts; climate, hygiene, and therapeutics, including the sovereign quinine, had no effect at all until resorcin was employed, then his intermittent fever and all the other symptoms disappeared entirely.—*Med. Wochenschrift.* T.

The Physiological Action of Podophyllin.

Dulacska made some observations on himself with podophyllin, thinking that the dose mentioned in the Hungarian pharmacopœia, 1.5—12. grams, where only one dose is given, was entirely too large. He therefore took 0.25 podophyllin with 0.02 of hyoscyamus—he is at present writing suffering from the bad effects, and to warn others of the large dose given writes the following :

Case 1.—Severe obstipation. A single dose, 0.02, of podophyllin caused 20 evacuations; while there was no pain there was more defecation than was intended.

Case 2.—Disease of the liver, catarrh of the stomach, beginning icterus. 0.02 grain in pill form caused 6—10 evacuations. The dose had to be diminished, since it could not be continued of that strength, and the American formula—℞. Podoph. 0.05 alcohol 10., M. S. ten drops three times a day—was given for some time, which in many cases proved to be quite efficient.

Case 3.—Hypertrophy of the liver, cause of which could not be determined. Obstipation was the most prominent symptom, 0.02 of podophyllin was given daily, which caused two evacuations and brought about a cure in a comparatively short time.

Case 4.—Valvular disease of the heart with its train of symptoms. The use of podophyllin in the above doses caused such violent diarrhœa that the discharges were similar to those of cholera patients.

Cases 5 and 6.—Two cases of typhlitis with obstipation. In one case an abscess finally developed, which was opened. In the function of the bowels no change was apparent. In the second case there was no evacuation from the bowels for eight days. Both of these cases improved wonderfully after the use of the podophyllin solution.

The conclusions are as follows:

Podophyllin should be given in small doses. It increases the action of the small intestines and causes a marked transudation.

2. It acts on the liver; it increases the secretion of the bile and corrects digestion.

3. In a variety of diseases of the liver its action is quite efficient.—*Pharm. Post.*

The Therapeutic Value of Iodoform in Diseases of the Eye.

The results obtained with iodoform in diseases of the eye at the Clinic, at Giesen, are the same as those recorded generally by all observers.

Iodoform is not of very much use in simple inflammations of the conjunctiva, or in general or blenorrhœal inflammations. In phlyctenular conjunctivitis it is not preferable to calomel, and in phlyctenular keratitis its use is accompanied with so much pain that it must be suspended at once. In blepharitis marginalis the mercurial ointments are just as satisfactory. In pannus of scrofulous children as well as infiltrations in the deeper tissues of the cornea its use was followed by a rapid clearing up of the corneal tissue. In ulcus serpens corneæ the action of iodoform lessened the number of paracenteses that were generally made, in the ordinary ulcer of the cornea a few applications often were sufficient to cause a disappearance of the injection and the pain. The duration of the course of treatment is shorter and the results generally are better than where cataplasms of salicylic, carbolic or boracic acid were used. In injury of the cornea, conjunctiva and sclera, the soothing effects as well as the antiseptic properties of iodoform were quite marked. Pereyra employs iodoform in the form of an ointment, 1:8, of vaseline, and also as a powder, dusted into the eye the same as calomel. P. claims that it is a myotic, and also reduces intraocular tension. According to P. myosis does not depend on an irritation as when eserine is used, but is due to a paralysis of the sympathetic nerve fibres. P. also employed it in two cases of secondary glaucoma, where eserine had utterly failed to relieve the severe ciliary neuralgia, and also cases of acute glaucoma, with quite satisfactory results, and a marked diminution of the intra-ocular tension. In all cases the severe pain subsided at once after the use of this drug. —*Schmidt's Jahrbücher.* T.

The Abortive Treatment of Soft Chancres.

The following is a brief account of Dr. Hebra's observation with salicylic acid in the treatment of soft chancres. Although the number of cases he reports is not large, yet his results were so exceptionally good that he feels perfectly justified in publishing his new method. He employs the pure salicylic acid applied direct to the sore. In nearly all cases two or three days of treatment was sufficient to cause a disappearance of all virulency from the ulcer, while the loss of tissue that had to be replaced required a few days longer. In special cases the organ was carefully washed with tepid water in order to remove all incrustations of dried secretions. After being carefully dried the acid was applied. The application must be carefully made in order that none of the crystal come in contact with the healthy skin, otherwise the treatment, which is usually quite painless, will cause the patient to complain. When suppuration is quite free, one application in twenty-four hours is all that is necessary. The author places great stress on the point that each time when the ulcer is dressed the penis should be washed with warm water. On the third day the salicylic acid had best be discontinued, and a simple plain ointment used instead, spread on strips of muslin. This plan of treatment is not only more rapid than the old methods, but it is also more agreeable. There are no pains caused at all, save a slight burning sensation after the first application, unless too much of the acid comes in contact with the healthy skin. A pledget of absorbent cotton is the best thing that can be employed as a dressing, for it will take up all discharges at once, and leave the wound in a perfectly dry condition. T.

The Action of Turpentine in Diphtheria.

In 1880 Bosse reported a case of diphtheria where turpentine had accidentally been given in large quantities, and the result, so far as the disease was concerned, was flattering. Later we find the report of a large number of these cases treated systematically with turpentine. Jozefowiez treated a number of cases, and gave an accurate description of four cases. He comes to the following conclusions:

1. Turpentine administered internally possesses and exerts a good action on diphtheria.

2. Several hours after taking it, its effects can be observed already; the membranes begin to swell and are separated from the underlying tissue.

3. The unpleasant after-effect of turpentine can be counteracted to a certain extent at least, and doses ranging from one to two tablespoonfuls can be given during the day. The action on the kidney soon passes away.

4. Intestinal catarrh contra-indicates the use of turpentine.

5. If an elevated temperature is present, it at the same time reduces it.

6. The local treatment with turpentine often exerts a beneficial action. From the number of cases reported, its action must influence the general diseased condition of the system, since the membranes seem to soften and separate more easily, when they can be removed by the patient.—*Deut. Med. Zeitung.* T.

Anæsthesia per Rectum.

Dr. Daniel Moliere has produced ether narcosis by forcing the ether into the rectum of the patient. In the first case, that of a young woman of 20, it was administered by means of a Richardson's spray apparatus. The absorption of the ether progressed very slowly, but in the course of 10 minutes the patient became unconscious. During the operation a few drops of ether, inhaled from a handkerchief, was sufficient to maintain profound anæthesia. After the operation, which progressed quietly, she vomited the soup that was injected shortly before the operation otherwise there was no disturbance. In the second case the ether was given in a different manner. A rubber tube about the thickness of a finger was introduced into the rectum, and the other end connected with a bottle of ether, which was placed in a vessel of hot water 50° C. The heated ether expanded and forced itself into the rectum, and in the course of 5 minutes the patient was unconscious. The operation to be made was the removal of a tumor from the antrum of Highmore, and in this class of operations about the face, the new procedure is likely to become quite valuable. In the next case the patient had always been a hard drinker, but he became anæsthetized without showing any signs of the stage of excitement.—*Lyon Medicale.* T.

Chloride of Zinc in Stick Form.

Chloride of zinc paste can only be applied to surfaces easy of access, but in many instances the physician desires to employ a remedy that can be pushed into the tissues. The ordinary form of stick chloride of zinc, in use for some time already, has the great disadvantage of being very hard and dangerous, while the action is in many cases entirely too intense and sudden. All these objections have been overcome by making a mixture of wheat flour and zinc, and rolling it out in the desired shape. The portion of the stick not intended to act is covered with a coating of wax; this also prevents admitting of the whole stick. The preparation is not difficult to make: 10 g. chloride of zinc and the same quantity of wheat flour are rubbed together until the mass becomes plastic, when it is rolled out on pill tile to the desired shape and thickness. They are now to be placed in an oven for six hours to dry, when they may be stored away in bottles made air-tight with paraffin. The zinc stick prepared in this manner can be bent, is resistent enough to push into carcinomatous tissue, does not melt too rapidly, but had best be made fresh frequently, since age makes it quite hard, and it does not dissolve as rapidly as is desired.—*Pharmaceutic Post.* T.

Antiseptic Treatment of Whooping-Cough.

Since the discovery by Koch of the bacillus tuberculosis, nearly all the diseases are claimed to be caused by a micro-organism. The theory that whooping-cough is an infectious disease has been entertained for some time by many; recently Poulet has examined the sputa from a whooping-cough patient, and found in it an organism supposed to be the cause of the disease. If we accept this etiology, then, of course, the treatment necessarily must be antiseptic. A. has treated his patients by letting them inhale fumes from thymol in the following manner: Thymol, 10.0; spirit vin., 250.0; aqua font., 750.0; this mixture is heated and the patient inhales the steam. Internally he prescribes ol terebinth, eucalyptus, thymol, and carbolic acid. Good results are promised this course of treatment. If any complications arise they are to be treated symptomatically.—*Pharmaceutische Post.* T.

The Action of Resorcin on the Spleen.

At the medical clinic of Genau, at the suggestion of Prof. Maraglinus, a number of observations were made in order to gain some information on the action of resorcin in tumors of the spleen, caused by long continued malarial poisoning. Resorcin was only given in such cases where, after repeated examinations, the tumor was found to be always of the same size. Then 2 grmm. per day was given. The action of the remedy is not at all certain; even in cases that are apparently quite similar, the one case was benefited, while the other was not affected in the least. Notwithstanding all this, Q. comes to the conclusion that resorcin has the property to reduce infectious tumors of the spleen. This action may take place while the fever and the malarious cachexia continue; in short, it is not dependent on the infectious process.—From *Deutsche Med. Zeitung.* By *Queirolo.* T.

The Secret Remedy Nuisance.

Until recently quacks and charlatans have had free play in France, and their business was prospering, but finally the government has issued orders prohibiting the sale of nostrums, or the prescription

of remedies unless legally qualified. Dr. Phil. Boar was arrested in France for the practice of some secret theory, and sentenced to two months' confinement and 1,000 francs; 500 of which was for unlawfully compounding drugs, and 500 francs for unlawfully practicing medicine. Such energetic interference by the police in this country would cause a scattering among the quacks to healthier climes.—*Pharmaceutisch Post.* T.

Correspondence.

Urinary Test-Papers.

In the July number of the Pacific Medical and Surgical Journal, page 27, is a concise description of the portable packet of urinary test-papers, at present being introduced to the medical profession on this continent by the firm of Parke, Davis & Co. This packet will form the subject of this communication.

On the first page of the April number of the Planet appeared their new advertisement, synchronically with the discussion of Dr. Oliver's English test-papers, at the New York Academy of Medicine; this latter being on the 194th page of the Journal, same number. During the discussion, two objections were made to these delicate tests: (1) The detecting minute quantities of albumin, which fact might possibly not be of pathological significance: (2) That picric acid might throw down peptones.

To answer these supposed objections: (1) Here, as in every other medical matter, we must be guided by judgment based upon our past experience, reading and conversations: (2) The presence of peptones (which some have not been so fortunate as to see, and therefore deny,) may be established by treating the specimen with Fehling's solution; so that disposes of the second objection.

We assuredly cannot reasonably object to a series of newly discovered chemical tests as too detailed and accurate; let us use the judgment with which we are endowed in these cases, and publicly thank the manufacturers thereof for going out of their way, this time; devoting a portion of their energy and capital to the elaboration of a most scientific cabinet packet of urinary tests.

C. E. NELSON, M. D., Late Editor Planet.

Dose of Aletris Farinosa.

In the August number of the THERAPEUTIC GAZETTE, in an article by me on page 354, you have "5 drop doses," when it should have been 15; please make the correction in your next issue.

R. L. HINTON.

PRESCOTT, ARK.

The Therapeutic Gazette

WILLIAM BRODIE, M. D., Editor.

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Many Drugs, Few Remedies.

UNQUESTIONABLY, we think, men as we find them in actual life, are more apt to exert themselves to appear great in the eyes of the world than they are to merit the honor, through that deep and silent work which alone can properly prepare the soil from which true greatness springs, and is kept alive and vigorous. It is a most laudable ambition to be held in respectful regard by one's contemporaries, and to be held in honorable remembrance by posterity. It is, moreover, an ambition in which much of even real heroism and some of the most effective efforts in the interests of humanity have had their source. We would by no means decry it. On the contrary, it is because we strongly commend it, that we condemn the delusive means through which men so often aim to gratify it. Any greatness which has not its origin in worth—the result of factitious effort—is of the texture of the mushroom rather than of the oak, and is temporary and delusive. It either withers away on the withdrawal of its artificial pabulum, or ceases soon to appropriate the food on which it thrived, and dies of inanition. True worth seldom blushes unseen, or wastes its sweetness on the desert air. It will blossom under even unpropitious skies, and needs not the artificial devices which are resorted to (frequently quite successfully, for a brief season) to make its counterfeit pass current.

We are not insensible to the fact that there may seem but little relevancy between the above reflections and the heading which precedes them, and, perhaps, this may not be any more apparent between them and such remarks as we may offer by way of a discourse on the text. The reflections were, however, aroused by a paper whose heading we have borrowed, read by Dr. George T. Welch before the

New Jersey Medical Society and published in a recent issue of the Medical Record. We disclaim all desire to do the writer injustice, but the perusal of his effort left us with the impression that he belongs to the class of those who do not properly subordinate a desire to be accounted profound, to that to be really wise in the matter of materia medica. A favorite device with his congeners, is to pooh-pooh everything that they do not comprehend, and to relegate it to the list of those things which are not worth understanding. They excuse their ignorance of the new on the plea of conservatism, which is too often but a synonym for the real and less commendable cause. They, however, are no longer quite so frequent as formerly, for which fact we are constrained to believe the increasingly frequent endorsements of newer drugs by those in authority is in a measure responsible. Your "conservative" has great respect for the authorities, his view of them also borrowing enchantment from the distance at which they reside from the scene of his humble labors, and when that distance happens to span an expanse of salt water, the enchantment is materially enhanced.

But to return to our mutton: Dr. Welch takes an exceedingly pessimistic view of the status of the healing art. He concedes that there is a lower percentage of sickness now than in the days of our fathers, fewer deaths to the thousand and a lengthened average of life, but denies to medicine proper any of the credit for this desirable condition of affairs; the meed of praise belongs, in his opinion, rather to the better houses, better food, better clothing, better morals, etc., of the average man of to-day, as compared with his ancestors across the bridge of a couple of centuries. While the improved sanitation and hygiene of these later days, have, doubtless, had much to do with the diminution of disease and the increase of longevity, it will not do to ignore the fact that the abridgement of the etiological list has been only at one end, and that to the other end have been added many causes arising directly out of the changed habits of the modern man, woman and child. It would be a difficult question to determine with scientific accuracy the truth or falsity of the statement which Dr. Welch makes with the characteristic boldness of his class, who seldom deem it necessary to base their assumptions on any clearly-defined substratum of facts. In our opinion (and it is, of course, only an opinion) the labors of the explorers in the arcanum of nature, and the observations made on the effects of drugs selected therefrom on healthy and on diseased tissues, and in modifying functional activity and diseased action, have not been altogether in vain. If Dr. Welch has not been able to apply the knowledge which he is presumed to have acquired from the schools, to the relief of human suffering, to the conservation of vitality, to the abridgement of disease as it occurs in his patients, or to the prolongation of the span of existence, in the case of any of the confiding ones who look to him for relief in the trying ordeal of disease, the fact excites scarcely less wonder than that he continues to practice his profession believing that his efforts are doomed to failure. His failure in the grand aim of his calling and his persistence in the said calling in spite of such failure, would excite in us very conflicting sentiments if we could but be brought to believe that he really means all he says. We would crave his pardon for this quite unavoidable lapse into the *argumentum ad hominem*.

As an illustration of the arguments with which Dr. Welch seeks to fortify the position which he assumes, is his mention of the fact that Stillé and Maisch enumerate one hundred and fifty remedies for rheumatism. Because so many remedies are recommended none of them are of any value! Dr. Welch evidently makes the mistake of confounding remedies with specifics —associating the two in his mind without the proper distinction as to their significance. He is afflicted with that circumscribed view of medicine in which the ideal of success consists in the tabulation of the various ills to which flesh is heir, with the drug which is "good for" each set opposite. Fortunately the *ignis fatuus* of specifics no longer lures the educated physician. In the ever-growing brightness of the light which a scientific study of disease casts over the field, this false light is rapidly fading and the number of those who pursue it is growing beautifully less. The long list which the authors referred to, have prepared of the drugs which have from time to time been recommended as "sure cures," is but a monument to those unscientific methods of studying disease, which Dr. Welch would perpetuate. Disease is no longer regarded as an entity which may be pursued into its lair and there put to death by charges of pills, and powders, and potions. The intelligent practitioner now treats the patient rather than the disease, regarding the sick man rather as a bark under stress of weather. He no longer aims to subdue the winds which howl around, but having possessed himself of a full knowledge of the craft and of the laws of the winds, he seeks to prevent his richly-freighted bark from being engulfed, and to have it successfully ride the storm which has assailed it. In this storm, and to avert disaster, the sails must be properly set and reefed, the leaks which are apt to be sprung must be promptly repaired, and all those other accidents which are so apt to occur, must be met with the skill of the educated seaman. Inflammatory rheumatism in its severer forms, is a black squall which must spend its fury, but thanks to the improved means now in the hands of the profession, it much more rarely engulfs its victim than formerly, and much less frequently leaves him with a permanent disability.

Unquestionably there are many more drugs in the materia medica than any one practitioner ever thinks of employing, but this fact would not of itself justify the abridgment of the list, any more than the fact that there are immensely more articles of diet than any one man ever eats, would furnish a sufficient reason for cutting down the list of comestibles to hog and hominy, and a half dozen or so of the other "staffs of life." While many relish hog and hominy and grow fat on it, there are some, the fastidiousness of whose stomachs and palates prefer something more delicate and savory. We have previously referred to the fact that on one occasion twelve physicians to a certain dispensary, with a view to economizing their funds, decided to cut down the list of drugs to the twenty most commonly in use. Accordingly each one was required

to select the twenty of his choice. On comparing the lists thus prepared all duplicates were struck off, and a consolidated list was made out, comprising those drugs for which each physician had signified a preference. The result was a list of upwards of a hundred drugs, and it could not be further reduced because of the fact that none of the physicians would consent to a further elimination of the articles which they deemed indispensable. There were many drugs here, but in the combined opinion of the dozen physicians they were all remedies. Doubtless, if this same plan were made to embrace all the physicians of this country there would be very few drugs eliminated from the materia medica. Neither Dr. Welch nor any other man can prepare a list of drugs for any other man, and his assumption that the drugs which he may not think necessary are not remedies, is a piece of assumption which he will doubtless retract on reflection. The fact of the matter is there are many shades of mind and the size and complexity of the materia medica are necessary to meet all these. It is a recognized fact that the drug which, in the hands of the physician who has made himself thoroughly familiar with its peculiarities, will produce results which he who is not thus familiar would fail to bring about with it.

We can quite endorse all that Dr. Welch states in regard to the nostrum abuse and the evils connected with the placing on the market of proprietary preparations with the recommendation that they are especially useful in the treatment of particular diseases. A greater abuse than this was never tolerated by a scientific profession, and one of the most glaring inconsistencies between scientific professions and conduct, is found in the endorsement which these nostrums receive at the hands of gentlemen of recognized prominence in the profession. The tendency of scientific medicine is manifestly in the direction of renouncing the sharply-defined divisions which the attachment of the different diseases of specific names would seem to imply. As man's mental scope and his knowledge of the disturbed physiological conditions which are called diseases, become more profound, the distinctions implied by the variety of names on the nosological list, become less and less marked. All diseases are in reality disturbances of physiological processes, and the scientific physician studies to understand the nature of these disturbances with a view to controlling them, rather than to place them under an arbitrary classification, and to set opposite each a remedy which will "Do them good." If this is the tendency of scientific medicine, and that it is the tendency few will undertake to dispute, it requires no argument to demonstrate that all nostrum-vending is directly antagonistic to it.

Some Medico-Legal Facts.

THE CASE of Weldon *vs.* Winslow in an English court not long since, brought up the question of the powers of physicians in securing commitments to insane asylums. The suit was against Dr. Forbes Winslow, the alienist, who had given a certificate for commitment to the private asylum over which he had charge. Another physician, according to the law requiring two separate and independent examiners, had given a certificate, but he had gone to the place where the patient was in company with Dr. Winslow, and after examining the patient together, they had each taken turns in stepping out of the room in order to enable them to make what was styled "separate and independent examinations." An attempt was then made to take the patient to the asylum, but seems not to have been successful; at all events, suit was brought for assault and battery against Dr. Winslow, alleging violence in trying to remove her, and also alleging libel in writing to the patient's husband that she was a proper subject for restraint.

The trial judge dismissed the action on both charges, deciding in favor of Dr. Winslow, and holding that he had acted without malice or improper motive. This judgment was appealed from and has recently been reversed The appellate court decided that the whole matter should have been left to a jury to decide, as Dr. Winslow might have been actuated by improper motives in giving a certificate of commitment to an asylum where he would receive fees from the confinement.

A physician who renders professional services to the county or city poor, pays, in general, little attention to the legal authority of the persons who request his services, but if it turns out that they were not the proper custodians of the poor, he may and very likely will be unable to collect his bill. An illustration of this is found in the records of one of the western courts, in a recent instance. It appeared that there were officials styled trustees of the township, and others called supervisors. The law said that the trustees of the township should arrange for medical services to the paupers, until the supervisors made provision. The supervisors had, however, made such provision by appointing a regular physician to attend to all calls of the kind. The trustees ignoring this, employed another physician, who after rendering his services presented his bill to the county authorities. They refused to pay, and the physician sued the county, but was beaten on the ground that the law expressly said how medical services were to be rendered, and the physician of the board of supervisors should have been called on. This was evidently a case of too much confidence in the trustees of the township. They ought to pay the bill out of their own pocket, but we have yet to hear of their doing so.

The question of sewer gas in a house is one of the most troublesome in the whole range of domestic affairs, and it often seems as if there was no remedy for a person who hires a house where this terrible plague exists. The tenant must in general remain, or if he abandons the house he must pay rent.

An interesting case in a New York City court not long since fixed the rule somewhat more in favor of the tenant. In that case the owner had stated with great emphasis that the house was in good condition, but no question was asked about the plumbing. The tenant said he did not care to look the house over, but would rely on the owner's statement. The house was subsequently found to be in a very defective condition as to the plumbing and there was a great stench from the sewer gas. As a result several persons were taken sick and one died. Uuder these circumstances the court held that if the house was

abandoned rent could not be collected. This decision was arrived at because of the positive statement that the house was in good condition, and the reliance of the tenant thereon.

An Englishman recently sued the physician who was treating his child for diphtheria, on the ground that the physician's neglect in allowing him to suck a tube used in the operation of tracheotomy had caused the father to have diphtheria also. The physician came out best in the litigation, however, and secured a dismissal of the charge.

Who is a Homœopath?

IT MAY be stated without fear of successful contradiction, that not all are homœopaths who proclaim themselves such on their signs and cards, and with scarcely less fear of successful contradiction it may be said that there are no practitioners of medicine who will strictly conform to the true definition of the term "Homœopathy," as descriptive of any particular system of practice. We think these facts are coming to be quite generally recognized, and we, furthermore, believe that the time is not distant when he who publicly proclaims himself a homœopath, will be held to do so with other than strictly scientific motives in view. A very large and respectable element in the ranks of the so-called homœopaths has for some time discarded the distinctive name, although still yielding nothing of their belief in the existence of the law of *similia similibus curantur*. These observant and educated men have become fully convinced that this law, while it may be successfully followed in the treatment of a large number and variety of affections, is not of universal applicability. The New York Medical Times is the intelligent organ of this rapidly growing class, and we are pleased to note that it quotes, with its approval, the following sentiment uttered by us in a recent number: "A homœopath is ruled by his dogma, and when he yields the point that the dogma is not universally applicable as a guide to therapeutics, he ceases to be a homœopath." It says, it knows of no one who claims that the practice of similars is applicable beyond its own sphere, and it has always been of the opinion that the title was improper and delusive, and its use in bad taste, to say the least. It urges all, who for any reason dub themselves homœopaths, to stop using the title and continue practice as experience and their own conscience may dictate. Then they will have learned when and how to use large doses as well as small ones. As to the public, there is no difficulty, for it will soon find out the mode of practice adopted by any practitioner, and when the general profession recognise that the action of a remedy depends upon the size of the dose which is administered, there will be no hope for sects, as all will be as nearly agreed as is possible for human beings to become. Such sentiments, from such a source, certainly augur well for the future, and, perhaps, the day is not as distant as it is generally believed to be, when the honest and educated practitioners of medicine will not be divided into sects because of some of the slight mental peculiarities, which, in other professions, are not sufficient to array co-workers for the common good, into opposing camps.

Menthol Pencils.

THE great popularity of the recently introduced migraine pencils, of menthol, has stimulated sharp competition among manufacturers, creating at the same time an extraordinary demand for an article of which the supply is necessarily limited. The inevitable results have followed. The price of the crystallized oil of peppermint has advanced, and there is a strong inducement to the unscrupulous to substitute for a portion of the menthol some cheaper substance. That this has actually been done on a large scale, abroad as well as in America, is shown by the circumstance that Dr. Mylius devotes an article (Zeitschrift des Allgemein Oester. Apotheker vereins), to the subject of the adulteration of menthol.*

An abstract or Dr. Mylius' paper appears unde the head of translations, which will repay careful perusal. It will be seen from this that the adulterations practiced are of the grossest character, and such as may be easily detected by simple tests.

The adulterants employed are, almost of necessity, fatty or waxy substances—most commonly paraffine wax. If, therefore, a minute portion of the substance of the pencil is scraped off and placed on a piece of thin white paper, which is then warmed, it produces a distinct translucent spot in the paper, which on continued application of a gentle heat, should wholly disappear as soon as the odor of menthol is dissipated. The presence of camphor-like substances will frequently reveal itself by the development of their characteristic odor during the evaporation. But the persistence of a translucent spot in the paper after the menthol has evaporated is conclusive proof that some non-volatile adulterant has been used.

Some manufacturers prefer to speak of menthol as mentholene. There is no objection to this but of affectation, provided it is understood that menthol and mentholene are identically the same, and that the value of the article is not proportioned to the length of the name.

The pencils, when made from pure menthol, have proved themselves a very efficient remedy for localized pain, especially of a neuralgic character. It will be unfortunate if its reputation shall be allowed to suffer from the prevalence of adulterations.

McDade's Formula in England.

WE called attention in our last number, to reports of failures from the use of McDade's formula coming from practitioners who had put it to the test in this country. The May 21st issue of the Medical Press and Circular has an article on the subject by Dr. J. W. Martin, in which the experience of that gentleman is similar to that which formed the basis of the unfavorable reports which we have referred to. He concludes from the evidence before him, that further and more extensive trial must be made

*The writer has seen pencils offered by an American manufacturing firm, which contained actually less than 20 per cent of menthol.

with this plan of treatment, before its claim for undoubted usefulness can be established. He thinks, however, that it would be unwise not to put it to further proof, as it is well known that uniform success or want of it, is not obtained by all experiments alike, and the very fact of its having been already favorably noticed by Dr. Sims, entitles it to a most careful and respectful consideration. The treatment may thus be said to be yet under trial. While the testimony concerning its value is not such as to encourage very bright hopes of the final judgment to be passed upon it, it is, perhaps, too soon to unconditionally condemn it as unworthy of confidence.

Journalistic.

The Pacific Medical and Surgical Journal, so long and so ably conducted by the Drs. Gibbons, father and son, and the Western Lancet, of which the same can be said of Dr. W. S. Whitwell, have amalgamated their interests editorially and financially—"In union there is strength" is the old motto. The editors, Dr. H. Gibbons, sen., and Dr. Whitwell, who have so ably conducted their separate journals, and the medical profession as subscribers, are to be congratulated upon the event now accomplished. Our best wishes are extended to the new journal for its success, and although we shall miss the familiar monthly appearance of the old ones we expect a rich treat in the reception of the new one. W. B.

EDITORIAL ABSTRACTS AND ANNOTATIONS.

A Cholera Remedy.

It is but natural that the present cholera scare will bring to the fore a great number of "sure cures," "specifics," etc., for that deadly malady. On the outbreak of the epidemic at Toulon, it was heralded throughout the nations that a certain remedy existed in inhalations of oxygen, and the lay readers of the newspapers derived considerable consolation in the supposed fact that, at last, science had been able to cope with a disease before which its previous efforts had been futile. Oxygen inhalations in cholera are, however, by no means a new remedy, they having been tried nearly 50 years ago, and without sufficient success to warrant their continuation. The more recent trial in the present epidemic in France, served to corroborate the previous experience, and soon the remedy was abandoned. Numerous other "sure cures" are on their rounds through the lay press. Medical readers will of course be able to attach to each proposed remedy its value, but in the event of an epidemic reaching this country, the physician in attendance upon a case of cholera, will find a considerable portion of his time employed in resisting the efforts of friends to give these much-lauded remedies a trial.

We find in the July number of the Chemist and Druggist a formula which commends itself by the weight of its authority, and which is claimed to have been very successful in previous epidemics. It was introduced by Dr. Roux, and employed by him in the epidemics of 1849 and 1852, and other physicians are reported to have employed it with good results. It is as follows: dissolve ten grains of washed sublimed sulphur in rectified sulphuric ether, aiding the solution if necessary by gentle heat. Immersion of the bottle in warm water is sufficient. The ether dissolves 1-80 of its weight of sulphur; rectified spirit, only 1-100. Consequently highly rectified ether should be selected. Twenty-five to thirty drops are added to a half wine-glass of sweetened water, seltzer water, sufficient to fill a wine-glass, completing the mixture, which is then to be given in divided doses. Simple as the preparation seems, it is stated to have proved effectual. In an inaugural thesis in 1782 Dr. M. Doudigney strongly supported this statement, declaring that he had obtained signal success by means of an ethereal solution of sulphur. A strange circumstance is related by the same author: A patient evincing a dislike to ether as a remedy, had administered to him, as a substitute, an opium and bismuth preparation, when the symptoms which had yielded to the ether treatment immediately reappeared. The *rationale* of the action of this solution is not stated, but, doubtless, if it is as serviceable as claimed, it acts through the deetructive action of the sulphur on the cholera microbe.

We recall a communication to the Medical Press and Circular, of September 5th., 1883, in which Dr. S. M. Thompson gives his experience in the treatment of cholera during the epidemic of 1867–8, in the British Hospital of Buenos Ayres, South America. The ordinary stimulant remedies were very faithfully tried, but in spite of them the death rate was alarmingly high, and after camphor, chlorodyne of all kinds, astringents and carminative mixtures, calomel and quinine, chlorate of potassium, inhalations of chloroform, lead and opium pills, aromatic sulphuric acid, brandy and wines, separately and combined, spinal ice-bags, hot jars, sand-bags, sinapisms, liniments, etc., had been tried without success, the following line of treatment, suggested by Dr. Nelson, was adopted: The vomiting and diarrhœa were encouraged by copious draughts of cold water until the stomach appeared quite clean of all food. This accomplished, a pill of one grain of fresh opium taked from the center of a large lump was given dry. The importunate cry for water, water, was unheeded and the patient quieted with the assurance that he would be given all he wished to drink after he had awaked from the sleep which the medicine was sure to produce. The sleep thus caused usually lasted from ten to fifteen minutes. On awakening half-a-drachm of tartaric acid dissolved in ten ounces of water and given the patient to drink. It is very necessary that no drink be given until the opium pill has had an opportunity to be absorbed. The dejections were disinfected with carbolic acid, the experience of the physicians having taught them that this disinfectant was preferable to all others, the sulphate of iron not excepted. In this respect the experience corroborates that of Dr. Koch, who by the way, speaks very slightingly of copperas whose use as a disinfectant is being so largely advocated in this country at the present time.

Another important point in connection with this treatment was abstinence from food from four to six hours, and, indeed, until the patient had become so improved as to have restored his natural functions. Some two hundred and thirty cases were thus treated.

and the success was sufficiently marked to warrant the following conclusions:

1st. That in Asiatic cholera during the onset and prevalence of severe action of the poison, all stimulants and medical draughts are worse than useless, and only tend to increase the irritability of the stomach, and waste the strength of the patient by increasing the diarrhœa and vomiting.

2nd. That a free current of air, which was always sought for by the patient, was most beneficial to him, while hot jars, sand in bags, sinapisms and counter-irritants only aid in the indescribable torture which already afflicts him.

3rd. No emetic is used but cold water.

4th. That perfect rest of body is, in the majority of cases, sufficient to prevent cramps, or at least to mitigate the severity of them.

5th. That when a physician is called to the patient who is in a state of collapse, or rather profoundly under the influence of the presence of the poison, for some hours, or even less, in severe cases; when the breath is colder than the surrounding atmosphere; when all secretion has ceased, and the pulse cannot be felt either at the elbow or axilla, and circulation having practically ceased, while the heart, meantime, continues to beat, and the mind remains sometimes preternaturally clear, it is useless, if not actually cruel, to apply treatment more active than tepid or cold affusion externally, with a tablespoonful of some acidulated drink as above, every ten minutes or quarter of an hour.

The typhoid stage, so-called, when reached by the patient, gave least hope to the physician, as none lived beyond the tenth day, and those cases were very few, as most succumbed at or before the fifth day.

The Digestive Ferments.

The extensive use into which the digestive ferments have come within the past decade, and their occasionally unsatisfactory action in conditions under which they would seem to be very clearly indicated, makes any intelligent consideration of them particularly interesting from a practical point of view. We have such a consideration in a recent article by Dr. Herbert E. Smith, in the July 5th issue of the New York Medical Journal. Dr. Smith traces the failure, or the partial success, of the employment of these ferments in therapeutics, to one of several causes: inefficiency of the preparation employed, errors in the methods of administration, or the fact that more had been expected of them than was reasonable. The various ferments in use are employed for three purposes, namely, the conversion of starch into maltose and various dextrines, their proteolytic action, and the emulsification of fats. For the first purpose the diastase of malt, the ptyalin of saliva, and the unnamed diastatic ferment of the pancreatic secretion, are employed. It was formerly supposed, as is, indeed, still supposed by many, that these ferments convert starch into glucose. It has, however, been shown that very little glucose is formed, but that the starch, as already stated, is converted into maltose and the various dextrines. Dr. Smith discussed the various preparations of malt in the market, and gives his preference to the solutions of diastase in thick syrup of maltose, dextrines and the extractives of the grain used. Liquid, beer-like preparations of which Hoff's is an example, do not serve the purposes for which they were intended, as in them the ferment is mostly destroyed in the process of manufacture.

Much as regards the efficacy of the extract of malt, to the end for which it is administered, depends on the time at which it is given. Inasmuch as its design is to act upon the starch it should be given at a time in the period consumed by the process of digestion, when its action is least likely to be interfered with by the secretion of antagonistic physiological juices. The proper time, therefore, for its administration is immediately after meals, or, better still, it should be given not as a medicine but as an addition to, or seasoning for the dish of oatmeal, boiled rice and milk gruel or other farinaceous food. Its taste being quite like that of sorghum syrup, it is not disagreeable to most people. The chief indication for its use is that of acid eructations following the ingestion of carbo-hydrates, due to acetic and butyric acid fermentations. It seems desirable in these to hurry the decomposable bodies out of the stomach before these fermentations can be established.

The ferments employed for their proteolytic action are the pepsin of the gastric juice, and trypsin of the pancreatic secretion. Much of the success of these ferments depends upon their intelligent exhibition. Pepsin is completely destroyed by the action of a free alkali or alkaline salts, such as sodium carbonate. Trypsin can act in the presence of free diluted acids, but is quickly destroyed by hydrochloric acid of the strength of the gastric juice, this destruction being accelerated if pepsin is also present. With these facts as a basis, any physician will see the absurdity of the hap-hazard method of administering these substances which is generally in vogue. The first appearance of free acid during gastric digestion varies with the nature of the food ingested, between forty-five minutes and two hours. It is possible that the ferments which are destroyed by the gastric juice of full acidity, as, for instance, the diastatic ferments, may act to some advantage during this time. If, therefore, pancreatin is to be given immediately after a meal for its effects on the proteids, it must be with the understanding that, at the best, the conditions are not so favorable for its action as for that of pepsin, and that it is very doubtful if any considerable part of the dose can pass through the pylorus before sufficient acid is secreted to destroy it.

Dr. Smith utters a timely warning against the host of nostrums said to contain these ferments. Some of them are incompatible mixtures, while others are curious examples of senseless polypharmacy which should be discountenanced by every scientific practitioner. The surest guarantee of securing a reliable preparation, is to employ only preparations issued by reputable houses. Certainly many of the scale pepsins and pancreatins are very efficient preparations, and likely to become more so from improved manufacturing processes. The saccharated preparations may, of course, be good, but cannot be recommended, as they are liable to falsification, and are very easily prepared extemporaneously, if desired.

The object to be aimed at in the administration of these ferments should be to imitate nature's processes during digestion. To do this they should be given the form of soluble pills or tablets. It may be given with hydrochloric acid, if desired, or in connection with some drug whose action is to excite the flow of

gastric juice. If it is deemed desirable to exhibit trypsin, the active principle of pancreatin, in suspected intestinal indigestion, this may be accomplished at the close of gastric digestion, when it should be well protected by sodium carbonate. Advantage may also be taken in these cases of partially digested milk, such milk being served up in the form of jellies, blanc mange, etc., which can be easily done. One pint of milk treated at the temperature of the body, with 5 grains of the extract of pancreas, will acquire as distinctly a bitter taste, in half an hour, as will be relished by most convalescents.

Dr. Smith has little confidence in the power of the preparations administered with a view of emulsifying fats, and intimates that preparations employed for this purpose will be very disappointing in their results.

The Treatment of Diabetes Mellitus.

In a paper upon this subject read before the recent meeting of the American Medical Association and published in the journal of that body, Dr. Austin Flint, Jr., quotes the dictum of Cantani, of the University of Naples, "Diabetes has become to-day a disease easily and certainly curable, provided that the treatment (cure) be not begun too late." After a somewhat extended experience Dr. Flint has been led to the conviction that this claim is not extravagant, and his views regarding diabetes are more optimistic than those generally entertained. He divides his treatment under three heads—dietetic, general and medicinal. Patients should be impressed with the fact that they are suffering from a grave disorder and that everything depends upon their full co-operation in the means employed for its relief. The anti-diabetic diet consists chiefly in the avoidance of such foods as contain starch. Bread should be absolutely interdicted, and an examination of the so-called anti-diabetic breads and flours on the market, has convinced Dr. Flint that almost all of them are absolutely unreliable, and most of them fraudulent, invariably containing starch in a greater or lesser degree. When a rigid anti-diabetic diet does not promptly influence the glycosuria, it may be well to subject the patient to an absolute fast for twenty-four hours, and follow this with an anti-diabetic regimen. By way of general treatment particular stress is placed upon the necessity of exercise, and especially systematic daily muscular exercise, such as is adopted by athletes. This includes systematic rubbing and a turkish or Russian bath once a week. The exercise should, however, never be carried to the point of fatigue. Should boils be very frequent the sulphide of calcium may be given, but this agent does not have any curative influence over the diabetes itself. If under this systematic anti diabetic diet and exercise, combined with the medicinal treatment, the sugar in the urine has been made to disappear, a return may be permitted to ordinary food, although it should be very gradual, the urine being frequently examined, and on the first reappearance of the sugar the more rigid diet should be resumed. Alcoholic excesses and the immoderate use of sweet fruits, and all use of sugar, should be interdicted at all times, and the patient should be impressed with the necessity of careful hygienic and temperate habits. In the words of Bouchardt, "You will not be cured except on the condition that you never believe yourself to be cured."

By way of medicinal treatment Dr. Flint recommends, as chief among the remedies which he employs, Clemens' solution of arsenite of bromine. This is a simple union of arsenious acid and bromine, dissolved in water and glycerine, in such a manner that two drops represent the one-fourth part of a grain of arsenic of bromine. Three drops of this may be taken three times a day in a little water after eating, gradually increasing the dose to five drops. It may be continued for weeks and months without producing any unfavorable effects, but no medicinal treatment is of any value when relied upon to the exclusion of the strictest dietetic treatment. On theoretical grounds Cantani's recommendation of lactic acid lemonade is useful, but Dr. Flint has had very little experience in its employment. The formula for its preparation is as follows: Pure lactic acid, one and one-half drachms to five drachms; aromatic water, five drachms to an ounce; water, two pints.

Dr. Flint argues the desirability of the founding of a hospital devoted to the treatment of diabetics, in which a dietetic treatment could be strictly carried out. Doubtless, such an institution would be productive of an incalculable amount of good, for when left to themselves there are comparatively few patients possessed of a sufficient amount of intelligence and self-restraint to qualify them to follow out, with the necessary rigidity, all the details of a successful plan of treatment.

The Chloride of Gold and Sodium as a Neurotic.

This double chloride is said to have been originally introduced by Hahnemann, following in whose wake the disciples of that erratic genius have, even down to the present time, prescribed it after their own peculiar manner, the favorite method being in the 30th dilution. Should anyone who is apt at figures undertake to estimate the amount of salt contained in a teaspoonful of this dilution, he will, unless supersaturated with the Hahnemannian spirit, be convinced that the amount is quite too small for any appreciable effect. Latterly, however, the combination of gold and sodium, in the form of the salt, has suggested itself as one which might possibly have therapeutic value, and it has received the attention of that distinguished experimental therapeutist, Dr. Roberts Bartholow, of Philadelphia. Dr. Bartholow regards it as a preparation possessing alterative properties; that is, it promotes tissue-metamorphosis or matabolism. It possesses also a tonic influence on the blood. Given in the dose of the twentieth of a grain, its action in promoting constructive metamorphosis, improving the globular constituents of the blood and increasing tissue-strength, is noticeable. When kept up for a length of time, however, these changes become more rapid and waste occurs in excess of repair. This latter use of it would, therefore, be suggested in sclerosis, whether nervous, hepatic, or renal, and Dr. Bartholow has found it especially valuable in posterior spinal sclerosis and in chronic intestinal nephritis. In locomotor ataxia, its early and persistent use has seemed to him to arrest the disease, and although some of his critics have appeared to think his credulity great, he is, nevertheless,

not inclined to surrender his belief in the efficacy of the salt in these affections. In fibroid kidney it has produced excellent results, not only in his hands, but in cases under the care of other practitioners, which have been reported to him. In that form of hypochondriasis co-incident with an onset of degenerative changes in the cerebral vessels, he has found the gold and sodium chloride to be very effective—so effective, indeed, as to lead him to the belief that the ancient notion that gold is a cordial to the mind in cases of melancholy, was based on a substantial substratum of determined facts.

A physician with large experience in the treatment of pseudo-croup, or laryngismus, and various cognate affections, has assured him that the remedy has been administered by him with profit in such cases. There are certain cases of sexual debility, accompanied by an extreme degree of hypochondriasis, which are the most difficult and unsatisfactory with which we have to deal. No remedy has seemed to Dr. Bartholow so serviceable in this troublesome condition of things. In simple sexual debility its administration promotes activity; in dysmenorrhœa, with scanty menstruation, and in chronic metritis, accompanied by these symptoms, the persistent administration of gold and sodium has done much good. Dr. Bartholow's object in contributing this brief statement of the effects of this salt has been chiefly to stimulate a further investigation into its therapeutic properties, and it is certainly to be hoped that a remedy of such possibly valuable properties, may receive that careful consideration which it deserves.

Pills as a Palatable Method of Administering Medicine.

Dr. M. S. French contributes an article on this subject to a recent number of the Medical and Surgical Reporter, in which he advances a number of arguments in favor of the use of pills as a means of administering drugs, whose odor or taste make them particularly disagreeable when administered in the form of powder, mixture or solution. These arguments will so readily suggest themselves to the reader as to scarcely make it necessary for us to reproduce them, and we shall refer simply to Dr. French's defense of ready-made pills, against which there still remains some opposition among practitioners. He refers to their beautiful appearance and the accuracy of the division of the dose, and to the fact that they are so quickly dispensed, thus effecting a considerable saving of time on the part both of the druggist and the patient, and guarding against the accidents which are liable to attend the extemporaneous manufacture of pills on the physician's prescription. The objections on the score of non-solubility of the coating of the pill, as well as of the pill mass, are too trivial to merit serious consideration. The developements in the art of pharmacy have quite removed these objections, and it is fair to presume that if they exist in the case of any particular sample of pills, such sample will be found either to be the product of an unworthy house, or the error be traceable to the neglect of the physician to adapt the form of the remedy to the peculiarities of the case in hand. It is scarcely necessary to mention the fact, that there are conditions of the alimentary canal in which the secretions are so entirely suspended as to cause an absence of a sufficient amount of fluid to act as a solvent upon the pill. It would, manifestly, be unjust and improper to hold the pill responsible for its passage intact with the fæces, in such a case.

Dr. French refers to the fact of the popularity of the so-called Hahnemannian system of cure, and very properly, we think, traces this popularity rather to the tiny, tasteless and otherwise attractive pellets, which it is the custom of its practitioners to administer than to any inherent superiority of the so-called system.

Doubtless, physicians would materially ingratiate themselves with their clientele if they were to study more carefully both the æsthetic tastes and the sensitiveness of the palates of their patients. In the case of the more powerful drugs, such as arsenic, aconitia, atropia, morphia, strychnia, phosphorus, etc., their administration in the form of the diminutive pills or granules which are placed on the market by houses whose reputation for ability and fidelity is at stake, would be very much to the interest of the practitioner, and, in the case of the more bulky drugs, the administration of a number of smaller pills would manifestly be more acceptable to the majority of patients, than the exhibition of the same quantity of the drug in the form of a bolus.

The Therapeutic Action of Belladonna.

Dr. P. N. Cilley chose this subject for a paper read before the Medical Society of Lowndes County, Alabama, and which is published in the Virginia Medical Monthly for July, 1884. He starts out with an interesting report of the action of the drug in his own case. From the effects of a sudden, violent, twisting wrench of his body he was attacked with "a sharp stabbing pain in the central and outer part of the hypogastric region." This was shortly followed by a tumefaction easy to move, and showing itself at the point of pain. The symptoms were clearly indicative of intestinal obstruction, due, probably, to invagination. After resorting, in vain, to anodynes and local applications of hot fomentations for the relief of the pain, and large injections of warm water per rectum, with a view to relieving the obstruction, his medical attendants applied a plaster spread with extract of belladonna, 4 by 6 inches in size, over the site of the obstruction, which had now existed nearly four days. As soon as he discovered the characteristic effects of belladonna in the throat he felt that peristaltic action was being stirred up, accompanied by borborygmus, and in a short time the sensation of tugging, or pulling, and slipping of the bowels at the seat of invagination, was followed by an extremely offensive discharge from the bowels, and relief. He accounts for the action of belladonna through its effect of relaxing muscular, and combating irritative contractility, by paralyzing the motor nerves. Through this action it, as it were, loosened the grip of the bowel upon itself.

He reports a similar case to his own in the person of a young negro, who was relieved by the same means.

In the treatment of strangulated hernia, Dr. Cilley has found the application of the soft extract freely to the strictured neck, to facilitate very materially the reduction of the tumor by taxis. In strangulated

hæmorrhoidal tumors, there is no remedy comparable to belladonna as a local application, while the internal administration of ½-gr. doses once, twice or three times a day, as may be necessary to keep the bowels open, will be found a valuable remedy in the permanent cure of many of these cases.

Dr. Cilley also adds his testimony to the value of belladonna ointment applied to the os, in the rigidity thereof, which often complicates labor. He has found that the application of the ointment to the posterior margin of the perineum is also valuable in relieving the rigidity thereof during labor. He enjoins the necessity, however, of careful support to the perineum after such use of belladonna as a failure to support it may result in a tear. Among the other uses to which he has put the drug with benefit, he mentions its well-known action in spasmodic stricture of the ureters or urethra, paraphimosis, iritis and painful dysmenorrhœa.

The Injection of a Solution of Salt in Acute Anæmia.

Fortunately the occasions for prompt interference to prevent a fatal issue of anæmia are rare, but unfortunately, when such cases do present themselves, the practitioner feels himself very much at loss to know the most effective means to employ. Acute anæmia may be the result of hemorrhage following a surgical operation, or causes which may be regarded as more idiopathic, as, for instance, hæmoptysis, post partum hemorrhage, etc. Latterly the introduction of transfusion of blood, mediate and immediate, has been recommended for this condition, and the results of the trial of this measure have certainly been such as to encourage its use under these trying circumstances. In general practice, however, the means are not always at hand, and if some substitute for blood could be suggested, the change would be valuable. We have before us a summarized report of thirteen cases of acute anæmia treated by injection of a solution of salt, Dr. G. Thon having collected the cases from the periodical literature and published the report in the Australian Medical Gazette. In six of these cases the cause of the acute anæmia was post partum hemorrhage. Five out of the six patients recovered completely, and the sixth improved temporarily, but died three weeks after the operation, from perforative peritonitis. The remaining cases which called for injection were as follows: One of collapse, following partial extirpation of an ovarian carcinoma; one of collapse, after poisoning by iodoform; one of collapse, through loss of blood during nephrotomy; one of anæmia, from secondary hemorrhage, after resection of the knee joint; one of hemorrhage from carcinoma of the cervix uteri; one of collapse, from severe compound communited fracture; and one from complete collapse and anæmia, during abundant hemorrhage from an ulcer of the stomach. Three of these seven cases, from various causes, were saved by the infusion of sodium chloride, and although the rest died, there was in every case material improvement, lasting for hours and days. The strength of the solution is recommended to be six parts of pure chloride of sodium to a thousand parts of distilled water, neutralized by two drops of the solution of soda. A convenient method of administering it is to place it, after being warmed to 39° C. (102.2 F.) in a cylindrical glass jar. To the base of this jar a tube 80 c. m. (26 inches) long is attached, ending in a transfusion canula, which is to be inserted into the vein. The fluid makes its way very readily into the latter. From a thousand to fifteen hundred centigrams of the solution may be employed, although in some instances not more than five hundred were found to be necessary. The injection may be made into either the basilic vein or radial artery.

The Treatment of Tonsillitis.

The prevalence of diphtheritic inflammation of the tonsils, and the liability through carelessness on the part of the examiner, or the wilful mistake on the part of the dishonest practitioner, to confusion of this inflammation with a violent grade of non-specific tonsillitis, makes a consideration of the latter all the more interesting and important. Unquestionably the honest practitioner, during the existence of an endemic of diphtheria, is frequently disposed in cases of the doubt which a violent case of pure tonsillitis arouses in his mind, to give the community the benefit of the doubt by pronouncing the case one of diphtheria. If there were an agent which could be depended upon to promptly allay non-specific inflammation of the tonsils, its use on the inception of the inflammation would, doubtless, be the means of frequently relieving the anxiety of both the medical attendant and friends. From the claims made by Dr. S. Solis Cohen, of Philadelphia, for the following treatment, it would seem that a decided step had been made towards the supplying of this desideratum. In simple inflammatory tonsillitis he administers the following: Take 2 fluidrachms each of the ammoniated tincture of guaiac, and the compound tincture of cinchona, which mix with 6 fluidrachms of clarified honey, and shake together until the sides of the vessel are well coated. To this add gradually a solution of 80 grains of chlorate of potassium in 4 ounces of water, shaking meanwhile. This is to be used as a gargle every one-half to three hours. Relief, he says, is usually experienced within a few hours, and recovery is complete. A saline cathartic may accompany the use of the gargle.

In rheumatic or constitutional tonsillitis, characterized by intense pain in swallowing, causing great accumulations of saliva from unwillingness to swallow, but with slight or no congestion of the throat, and subsequent fever, he gives the following, in tablespoonful doses, every two hours:

℞ Sodii salicylatis, ʒ ii.
Ol. gaultheriæ, ♏ j.
Liquor ammoniæ citratis, syrup simplicis, āā ʒ ii.

M. The intervals of administration may be lengthened as the pain subsides. Pieces of ice or guaiac gargle produce comfort, and a stiff neck is best relieved by faradization. Salicylate of quinine or cinchonidine, may be substituted for the above if a tonic be required, in 5-grain doses every four to six hours.

If this treatment shall prove as promptly efficacious as Dr. Cohen claims it has in his hands, its administration in the early stage of congestion of the tonsils cannot but prove valuable, even though the case should subsequently develop into one of diphtheria.

The Treatment of Carbuncle.

Although carbuncle is usually classed among the surgical affections, it comes as properly under the nosological list of the medical practitioner, for it is an affection the treatment of which the general practitioner rarely, if ever, delegates to the specialist in surgery. It appears, however, from a recent clinical lecture delivered by Dr. John Ashhurst, jr., of Philadelphia, that there exists the danger of incalculable injury from a close conformity to the traditional methods of treatment. A carbuncle is, Dr. Ashhurst states, nothing more than a large boil, differing from a furuncle only in degree. The usual opinion is, we believe, that a carbuncle is an accumulation of boils. This opinion has its origin in the fact of the numerous openings in the carbuncle. These openings are, however, not those of separate boils. Dr. Collins Warren, of Boston, found by a microscopical examination of the skin of the back where carbuncles usually occur, that there are little processes or tubes of fat connecting the deeper tissues with the surface,—columnæ adiposæ. It is along these columns that the pus of the carbuncles, which originates as a phlegmon in the deep cellular tissue, begins to make its way to the surface, thus causing these separate pimples.

Although carbuncle occurring on the face is usually held to have a fatal termination, such has not been the experience of Dr. Ashhurst. Regardless of the seat of its attack, he maintains that unless occurring in a patient with Bright's disease or diabetes, or in such a situation as to endanger internal organs, death will seldom ensue from carbuncle, except as a result of injudicious treatment. He denounces with considerable vigor the old-fashioned crucial incision. While it has some advantages, these are more than counterbalanced by disadvantages. He speaks also of the cauterization of the carbuncle with a view to causing central sloughing, as of a relic of barbarism, and he regards it as a most fortunate fact that the recommendation of some later surgeons to excise the whole mass of the carbuncle has not been received with favor. The method which he now invariably employs is the pressure treatment, after the manner first recommended by Mr. O'Ferrall, an Irish surgeon. He has modified the treatment as originally recommended, by securing the pressure by means of strips of adhesive plaster applied concentrically as they are used in the treatment of swelled testicle. The whole growth is thus covered, with the exception of the space in the centre to allow the slough to come out. He has found this treatment to yield much better results, both as regards immediate relief of the suffering and the ultimate complete recovery, than any of the other methods which he has seen followed.

Germ Theory and Heroic Doses.

Any one who has been a close observer must have noticed the growth of therapeutic skepticism in certain quarters, during the past couple of decades. This growth has been most rapid among those who have had really the least experience in the treatment of disease, their studies and observations being rather in the line of physiological and pathological research. While the active, working practitioner has been but very slightly affected by these views sought to be promulgated by these authors, it is to be feared that the young practitioners are inclined to carry with them into the active duties of their profession, the influence of the teachings of those under whom their medical knowledge was acquired. It is the opinion of the venerable editor of the Journal of the American Medical Association that there is setting in a reaction from this skepticism and expectancy in the treatment of disease, and that the cause of this reaction is largely traceable to the rapid development of the doctrine of germ etiology, and consequent germicide therapeutics. This reaction began with the revival of the antipyretic treatment of fevers, and it is already so great as to justify the fear that patients may be placed in greater danger from the large doses of microbe remedies administered in some cases, than from the microbes themselves. Our contemporary very judiciously cautions against practitioners going to too great lengths in this direction. He thinks that the large doses of corrosive sublimate which have latterly been recommended, are extremely dangerous, and he advises practitioners against a too ready acceptance of the rose-colored opinions expressed of the action of this germicide. While, doubtless, there are numerous affections in which the destruction of the bacteria is a consummation devoutly to be wished, the fact should never be lost sight of that there is a danger, while pursuing the parasite, of destroying the patient whom it infects. We would heartily coincide with our contemporary, and admonish our readers that they be not carried away by the weight of authority under which the use of the heroic doses of the bi-chloride of mercury is becoming so popular.

Croton Oil in Alopecia Areata.

The Journal of Cutaneous and Venereal Diseases in its issue for August, gives a synoptical account from L'Union Medicale, of the use of croton oil in the deaf and dumb asylum in Paris, in the treatment of porrigo decalvans (alopecia areata). In order to prevent spreading over too large a surface Dr. La Dreit De Lacharriere, the physician-in-chief, conceived the idea of combining the oil in the proportion of one half with cocoa butter and virgin wax, the resulting mass being moulded into sticks such as are manufactured for cosmetic purposes. These sticks are wrapped in lead foil, which both serves as a preservative and renders them more convenient to handle. Previous to the application of the stick the hair of the affected part must be cut as close as possible, and when the state of the scalp will permit, it had better be shaved. The diseased surface having then been subjected to friction for a few moments, is covered with a thick layer of cotton pomade, over which, to protect it from the air, is placed a linen cloth secured by a head-band of silk. On the appearance of the yellowish crust which follows the active inflammation produced by the application, a few emollient poultices are applied. These hasten the detachment of the crusts, which, upon examination, are found to contain a large number of spores. The results of this treatment have been highly satisfactory, and Dr. Lacharriere entertains not the slightest

doubt as to the superiority in every respect of his croton tiglium treatment, over both epilation and the use of other parasiticides.

The Treatment of Gonorrhœa.

Ever and anon, the subject of the treatment of gonorrhœa presents itself, and the number of "sure cures" for the affection, will, at the present rate of increase, soon rival the proverbially numerous "sure cures" for rheumatism. The multitude of these remedies is the strongest argument in support of the intractable nature of the affection, and but serve to add force to the admonition not to promise the patient the speedy recovery which it is too largely the practice, and especially of younger practitioners, to do. Among the latter remedies is a formula recommended by Dr. Dellenbaugh, in the College and Clinical Record. It is as follows:

℞ Resorcin, ʒ j.
Boracic acid, gr. xx.
Acetate of zinc, gr. ¼—½.
Distilled water, ʒ iv.

M.

Of this solution two teaspoonfuls are injected three times daily. It is said to be nearly or quite painless, and its rationale lies in the germicide and slightly astringent nature of its ingredients.

Another "new treatment" is recommended by a correspondent of the Lancet. It consists in the regular administration, every three hours, of five grains of the iodide of potassium, and full doses of cubebs in powder. The cubebs, in drachm doses, it is claimed, rarely fail to cut short the ailment rapidly, and the iodide, besides its solvent influence on the essential element of the powder, has a well recognized action on the various mucous surfaces.

Phosphorus in Tubercular Disease.

Dr. Jno. C. Thorowgood has an article in the British Medical Journal, in which he gives the results of his employment of phosphorus, and hypophosphites of potash and soda, in the treatment of tubercular deposits. He speaks of these remedies in terms of well-nigh extravagant praise, but his standing in the profession will, nevertheless, warrant a trial of the agents. His experience dates back about twenty years, when he commenced the administration of the phosphorated oil. The objectionable taste of this preparation, however, induced him to substitute for it the hypophosphite salts, which contain phosphorus in a very low state of oxidation. He anticipated the discovery of the tubercle bacillus with the conviction born of observation, that there were cases of lung disease in which something seemed most decidedly to stop the way towards recovery by means of drugs given per os. He is convinced that if inflammation alone be the sole factor in the etiology of phthisis, the disease would not be as generally incurable as experience has shown it to be. The discovery of Koch has revealed the cause of the incurable cases, and his observations made subsequently to this discovery, have convinced him that in consolidation of the lung and pleuritic thickenings, in which it is impossible to detect bacilli, the hypophosphite of potash is a promptly efficacious remedy. When the sputa reveal the characteristic bacillus, this treatment is not efficacious.

A Substitute for Quinine in Typhoid Fever.

The Medical Bulletin states that Dr. Daunt, of Brazil, highly recommends chlorohydrate of perevina, an extract from the bark of geissospermum vellosi, as a substitute for quinine in typhoid fever. The dose is from 12 to 24 grains during the twenty-four hours. It is intensely bitter and should be given in capsules. Failing to state the exact purposes for which this remedy with the polysyllabic name is recommended, we apprehend that the drug will not readily be administered by physicians who have had any experience in the use of quinine in typhoid fever. The only use for which quinine can be recommended in this disease is as an anti-pyretic, for which purpose it should be given in large doses. The administration of quinine in tonic doses in typhoid fever has been abundantly proven to be useless, and worse than useless.

Contra-Indications in the use of Quinine.

From the result of clinical observations Dr. Rabuteau cautions in Allgemeine Medicinische Central Zeitung, against the simultaneous administration of the iodide of potassium and the sulphate of quinine. He has noticed that when these are given combination they cause pain in the stomach, nausea and vomiting. These symptoms, he believes, to be due to the liberation of pure iodine in the stomach. He declares that quinine is contra-indicated in women during menstruation. He cites instances in which women who were able to take quinine in the intervals between their menses were unable to do so during menstruation, because of the intense hypogastric pain which invariably followed its use.

A New Remedy for Phthisis.

According to the Lancet, Dr. Pick affirms that aluminium and its compounds constitute a most effective remedy against pulmonary tuberculosis. His statement is based upon results noted in experiments upon rabbits, as well as on clinical observations. In one case where infiltration of the apices of the lungs had occurred, the morbid symptoms are said to have disappeared on the use of the following compound: Metallic aluminium, 8 grammes (ʒ ii); aluminium hydrate, 5 grammes (ʒ i¼); calcium carbonate, 5 grammes (ʒ j¼); gum tragacanth q. s. This was divided into 60 pills, one of which was administered three times a day.

Book Reviews and Notices.

The Theory and Practice of Medicine. By Frederick T. Roberts, M. D., B. Sc., F. R. C. P., Professor of Materia Medica and Therapeutics and of Clinical Medicine at University College; Physician to University College Hospital; Physician to Brompton Hospital for Consumption and Diseases of the Chest; Examiner in Medicine at the Royal College of Surgeons; Examiner in Materia Medica at the University of London, and at the Royal College of Physicians, etc., etc. With illustrations. Fifth American edition.

Philadelphia: P. Blakiston, Son & Co., No. 1012 Walnut St. 1884.

Detroit: J. MacFarlane.

When a book on the theory and practice of medicine reaches its fifth edition in so short a time as this of Roberts, it is a sufficient notice that it is more than ordinarily meritorious. Since the last, or fourth, edition was issued, the author has thoroughly revised it throughout, and as many subjects have been fully investigated and discussed since that time, he has endeavored to incorporate the results, so far as he has considered them of practical value or importance, in the present volume. Especially so in diseases of the nervous system, several of which have been re-arranged and re-written, and some subjects have been introduced for the first time. The chapter on diseases of the skin has been practically re-written. A close examination of the book places it, in our opinion, as one of the best for the medical student. Diseases are discussed under the general heads of ætiology, anatomical characters, varieties and types, complications and sequelæ, predisposing causes, symptoms, termination, diagnosis, prognosis, and treatment. In the matter of treatment the author is very happy—not in any way dogmatic, but very practical, and given in such a way that the student cannot but perceive the reasons why such and such remedies should be given. To older physicians who either have not the means to procure encyclopædic volumes on the art and science of medicine, or who do not have the time to read them, Roberts' Practice is invaluable. The publishers have issued it in a handsome volume of over 1,000 pages with a comprehensive index. We cordially commend it as a very valuable work on the theory and practice of medicine.

Hooper's Physician's Vade Mecum. A Manual of the Principles and Practice of Physic, with an Outline of General Pathology, Therapeutics and Hygiene. Tenth edition. Revised by Wm. Augustus Guy, M. B. Cantab., F. R. S., Fellow of the Royal College of Physicians; late Professor of Forensic Medicine and Hygiene, King's College, London; Consulting Physician to King's College Hospital, etc., etc.; and John Harley, M. D. Lond., F. L. S., Fellow of the Royal College of Physicians, Hon. Fellow of King's College and late Physician to the London Fever Hospital, Lecturer on General Anatomy and Physiology at, and Physician to, St. Thomas' Hospital. Vol. II.

New York: Wm. Wood & Co., 56 and 58 Lafayette Place. 1884.

Detroit: John MacFarlane.

This is the June volume of Wood's Library of Standard Medical Authors.

"This book is intended to be in the largest sense of the term a practical work; that is to say, it aims at bringing together in a small compass, and in a form easy of reference, those items of information which the practitioner would wish to possess when he stands at the bedside, or when he studies a case with a view to its treatment."

We quote the above from the introduction, and an examination of it bears out the truth of the same. It contains a vast amount of information of a truly practical character, which does not find a place in formal descriptions of individual diseases. Originally the work was published in 1823, by Dr. Hooper, and was so successful and so well received by the medical profession, that it continued to be issued until it has reached the present, the 10th edition. Under the hands of Drs. Guy and Harley it has reached its present eminence, and can be said to be at the head of the class of medical works to which it belongs.

PAMPHLETS AND ANNOUNCEMENTS.

Memoir on the Nature of Diphtheria. By Drs. H. C. Wood and H. F. Formad, of Philadelphia. Appendix A. Report of the National Board of Health for 1882. Illustrated. The above is a valuable addition to the literature of diphtheria up to the date of its publication, Sept. 20th, 1882, since which but little has been added. Our thanks are due to the writers for one copy.

77th Annual Announcement and Catalogue of the College of Physicians and Surgeons, Med. Dept. of Columbia College in the City of New York. Term begins Oct. 1st and ends about May 1st, 1885.

A Paper by Wm. McLaury, M. D. (The Senses—Five or Seven), read before the N. W. Medical and Surgical Society, March 19th, 1884.

44th Annual Announcement of the Medical Dept of the University of the City of New York. Regular term begins Oct. 1st, 1884, and ends the middle of March, 1885.

4th Annual Announcement of the Omaha Medical College, Session 1884-5, Omaha, Nebraska. Term begins Oct. 6th, 1884, and closes March 26th, 1885.

16th Annual Catalogue and Announcement of the Woman's Medical College of the New York Infirmary. Term begins Oct. 1st and ends May 1st, 1885.

Report of Proceedings of the Tennessee State Board of Health. Quarterly meeting, Nashville, July 1st, 1884. Dr. J. Berrien Lindsley, Sec'y ex-officio.

5th Annual Announcement Memphis Hospital Medical College, Memphis, Tennessee. Session 1884-5 opens Oct. 1st and closes March 1st, 1885.

43d Annual Announcement of the St. Louis College of Medicine, St. Louis, Mo. Session of 1884-5 opens Sept. 22d and closes March 1st, 1885.

3d Annual Announcement of the Iowa College of Physicians and Surgeons, DesMoines. Commences Sept. 24th, 1884, and closes March 8, 1885.

In Memoriam. Within this urn lie the ashes of Samuel David Gross, a Master in Surgery. With kind regards of D. W. Yandell, M. D.

Prevention and Restriction of Cholera. Document issued by the Michigan State Board of Health, July, 1884.

Therapeutic Progress.

New and Valuable Remedies.—Damiana.—Damiana was used in Mexico many years ago, but I believe I was the first to capture this Mexican beauty and present its wonderful merits to the profession at large. In years of trials it has worn well as manifested by experiments and experience of many of our best men from every quarter of the globe. It has had severe trials and criticisms; it has been counterfeited and substituted, but scientists have exposed its imitators, and it has proven and reproven its own merit. I am proud to have added this one brick to the column erected to the honor and to the memory of our noble calling.

In regard to the history, botany, etc., of damiana, we condense the following descriptions from the THERAPEUTIC GAZETTE:

"As early as 1699, it was learned through the chronicles of the Spanish Missionary, Juan Maria de Salvatierra, that damiana was employed by the natives of Mexico as a remedy in impotency and to empower them to perform the sexual act. It is for this purpose, principally, that this plant has been administered by Mexican physicians up to the present day. It was not, however, until 1874 that the drug was introduced into the United States, and Dr. John J. Caldwell, of Baltimore, is credited with having first closely studied its action and made its virtues as a powerful aphrodisiac known through medical journals."

Botanical Origin.—(From an article by Dr. Ig. Urban, in Archiv. des Pharmacie, Zeitschrift des Deutschen Apotheker Vereins, and translated for the THERAPEUTIC GAZETTE, June, 1882, p. 209.) For the botanical description of the plant which yields damiana, we are indebted to Prof. Lester F. Ward. This naturalist recognized in it a new turneracea, and, in view of its special application, he denominated it turnera aphrodisiaca, furnishing at the same time, the Virginia Medical Monthly (April, 1876, p. 49,) with a paper upon its peculiar distinctive qualities.

As soon as this journal reached the botanists of Europe, Butten republishes this descriptive article in his Journal of Botany (New Series, Vol. IX., 1880, p. 20.) Through the agencies, as well as the Biology of Central America (Contributions to the Knowledge of the Fauna and Flora of Mexico, Central America, Edited by Godman and Salvin; Botany, by W. B. Hemsley, Vol. I., p. 474), in which this plant is likewise mentioned, though only by name, our knowledge has been gained of the existence of this species of turnera.

"After I had collected from all the larger European museums, with the exception of the English, materials for an enlarged and detailed monograph upon the whole family of the shrub, I was somewhat surprised to discover, amidst all these numerous available specimens coming from Mexico, not one which answered, even in a measure, its characteristic botanical definition. Desirous of securing the drug, I addressed myself, simultaneously, to the firm of Gehe & Co., in Dresden, and to Parke, Davis & Co., in Detroit, Michigan, and received, in return, from the Messrs. Gehe & Co., samples of turnera aphrodisiaca, which agreed, in the most accurate manner, with the description of Ward; whilst the house of Parke, Davis & Co. favored me, in a most charming spirit of kindness, not only with similar specimens, but also with a second species, originating in California, which is represented as coming from turnera diffusa (Willd). This consignment was accompanied, at the same time, with descriptive circulars, sent by this energetic firm, which contain all that is essential, respecting the history, therapeutic use, and action of the drug.

"Genuine damiana, such as is derived from turnera aphrodisiaca and turnera diffusa, appears in commerce in the form of leaves and young shoots, with which flowers, fruit, or portions of fruit, or seeds, even old branches are variously mingled, and possess a fragrance that reminds one of lemons, combined with an aromatic flavor. It readily gives up its constituent properties to hot water, or a mixture of alcohol and water.

"Because there is often sold under the name of damiana a drug consisting of the leaves of aplopapus discoidens, D. C , or Biglovia venata, Gray (two compositæ), and as there exists also one or two other plants under the name of damiana, it will be well to enumerate here the characteristics by which it can be proven with certainty that a drug is derived from the turneracea. This is most readily done when seeds, fruits or flowers are mixed with the leaves. The blossoms have a five-leaved calyx, the leaves growing more or less into a cylindrical, short, bell-shaped or funnel-shaped tube; generally these not very distinct nerves run through the free extremities of the leaves, the middle nerve being usually prolonged in the form of short threads beyond the point of the calyx leaf. The integumentary edges of the two inner calyx leaves point to their quincuncial covering in the bud later on. The five free petals are inserted in the throat of the calyx tube and alternate with the calyx teeth; they have an outline from oblong to broad, reversed egg-shaped and are cuniformly narrowed toward their bases; their covering in the bud is twisted in such a manner that if you imagine yourself placed in the center of the bud, the covering (outer) part of each flower-leaf lays to the right hand, the covered one to the left. The five stamens which grow upon the basis of the calyx tube, or somewhat above the basis, stand in front of the calyx leaves and enter the anther, which open inwardly lengthways from their back. From the point of the unilocular ovary, with its greater or less number of eggs, three free styles originate, one of which falls over one of the foreleaves; their heads are slit more or less distinctly whip-like. The fruit (at least of the family Turnera) is a globular or oblong capsule, from a loculicidal opening at the top; the three flaps bear the seeds or their stems at the centre and generally remain united at the base; the finely mashed venous network of the back usually becomes indistinct by the swelling of the small intervening spaces which protrude like warts of greater or lesser size. The seeds are particularly characteristic; from short oval to oblong in circumference, but generally more or less curved toward the raphi; the cone-shaped or semi-globular navel is defined against the seed by a distinct narrowing. The chalaza sometimes lays at the very blunt basis, sometimes more toward the front (bauchseite), and often protrudes in the shape of a wart or of a very short hollow uvula. The raphi running from the chalaza to the hilum is commonly recognizable by its darker color; the seed-coat is handsome and regularly netlike, the longitudinal veins project somewhat more markedly, the cross-veins approach each other more closely; from the hilum (scar) procedes a thin-skinned whitish or yellowish, finally often brownish, anillus, which adheres to the seed on its lower side, and generally reaches to the base—in the axil between the peduncle and the axis of derivation—but always only at this spot; with most species side-buds (serial prolification) occur, which, after the dropping of the fruit, sometimes come to a development and thus cause the further ramification of the plant.

"The leaves of the turneracea are of the most manifold form, but always alternate, with exception of the two leaves following the cotyledons. However, I believe a number of turneracea amongst which T. aprhodisiaca and T. diffusa can be recognized as such in their sterile state; for the leaves of those on their reverse side, as well as the younger branches, the foreleaves, the outside of the calyx, the ovarium and the fruit are adorned with very small glands, which had hitherto not been noticed. I presume that even these glands furnish the active principle of the damiana. Unfortunately, these glands are not found on the species which are cultivated in botanical gardens, and therefore such description as I can

give of their structure is imperfect. If leaves of damiana are boiled up, and if the yellow or whitish points are carefully removed with a steel needle, they show under the microscope a spherical circumference with indentations, as the raspberry shows them in its individual berries, when seen from above. Their size is about 0.08 to 0.1 mm. When crushed, they leave a pasty mass. Should the officinal material really be contained in these, then very likly also other, especially Brazilian species, might be employed as damiana, as the same structures are found in these. I shall, later, in a special communication, report the names and habitat of these species, nearly all of which have never been described.

"At present we refer only to T. aphrodisiaca and T. diffusa. These belong to a small group of shrub-like size, which are distinguished by comparatively small leaves with veins strongly indented from the upperside and with teeth curved backwards on the leaf edges; furthermore, by the presence of very small, mostly broom like bractea, which originate out of the petiole itself, somewhat above its insertion and just below its articulation; further by solitary blossoms inserted into the petioles between the stipels, by two fore-leaves originating close under the calyx and by strongly curved seeds. The two drugs are easily distinguished one from the other."

I am well satisfied from quite an extended experience with the tincture and extract of this plant of its powerful influence over the urino-genital organs of both sexes, as in moderate doses it increases the flow of urine as well as the sexual appetite.

The cases that have come under my observation are given as an introduction to this new remedy, and for what they are worth, solely with the view of calling the attention of the profession to the virtues of this pretty little plant, culled from the prolific soil of Mexico—a field, no doubt, teeming with a wealth of unknown medicines, waiting for the progress of a searching science to penetrate and grasp her hidden treasures. In its administration, I prefer the fluid extract, as it is less bulky, more positive in its effects, and more reliable and uniform, as proven in the cases now under my care. In smaller doses it seems to have a specific effect on all the organs of the pelvis, giving increased tone and activity to all the secretions of that vicinity.

After a continued experience of several years with preparations of this plant, commonly known as damiana, and lately determined by L. Ward as turnera aphrodisiaca, I find that my first papers and experiments have been well sustained in establishing its merits as a powerful, permanent and determined aphrodisiac, as well as an alterative aperient of remarkably fine quality, indeed, of such a nature that, should it possess no other medical value, this alone would place it high in the therapeutical world, when well-known and appreciated. My attention has been called time and again by my patients to this fact, that after a few days' exhibition of this fluid extract, which preparation I prefer to prescribe to all others, in doses of a dessert-spoonful three times a day, their bowels have been moved with mushy stools often twice a day. My esteemed friend, Alex. Murray, M. D., F. R. C. S., of New York city, was the first to call attention to this feature of damiana through the Medical Record.

The name damiana appears in the mythology of the Ephesians. In the temple of Diana, the most gorgeous and beautiful halls were termed "The Damiana Corridors," or "The Amoranda."

"Reduced sexual power, from whatever cause it may arise, is one of the most distressing of maladies, and is therefore entitled to the deepest sympathy and consideration on the part of the honest practitioner, by whom, unfortunately, it is rarely discussed." From the intimate connection which exists between the urethra, the prostate gland, the seminal vesicles, ejaculatory and the differential ducts, and the tubes, it is not surprising that lesions of that passage should exert a powerful effect upon the functions of generation, whether that effect be due to the extention of morbid action through continuity of structure, or to reflex action. Hence it is that many persons affected with urethral disorders suffer from more or less marked disturbance in their sexual power, amounting in some instances to impotence, or inability to copulate, either from inability of introcession or premature ejaculation, both states being associated with imperfect or transient erections—in many cases dependent upon stricture, inflammation, and hyperæsthesia of the posterior portion of the urethra.

Case 1.—T. W., a young gentleman of wealth and somewhat "roue," called at my office September 25th, the very picture of health, æt. about 30, complaining of a failure in his effort at copulation, owing to a partial loss of erectile effort. On examination I found the history of excessive venery only. The sound exploration failed to discover either stricture or tenderness of the urethral tract. All other functions being normal, I advised him simple rest for a couple of weeks. After due trial he returned, reporting treatment so far a failure. I then placed him upon the fluid extract of damiana—tablespoonful doses, well diluted, to be taken morning and evening, together with a generous diet, and a respite from all genital exercise. After ten days of such treatment he reported himself fully rehabilitated and fully potent.

Case 2.—September 2d, a gentleman of middle life, aged in the fifties, Mr. D., calls concerning an indescribable pain or sensation about the head, with a loss of power and desire for sexual connection; attributed it to great and continued trouble in his business relations. On examination I failed to find any lesions of the genito-urinary organs or functional disturbance of his alimentary canal. Indeed, he seemed in all respects a fair specimen of health, with the two exceptions named. I ordered him free use of damiana, and occasionally, when the pain in the head was severe, application of the constant current of electricity to the nape of his neck, down the spinal column. This treatment was continued several weeks with very fair results, though his business troubles were still on his mind.

Case 3.—W. E. J., æt. 24, called December 10th, apparently in good health, but complaining of inability to perform the sexual act. I failed to discover any lesion of the urethral tract or any other trouble about his person, except that his virile organ was small and flaccid. He reports good erections when abed and alone, but utter failure of this effort when in company with a female about to copulate. I deemed this a case of genital demoralization, and placed him under the most advanced treatment for the same, with electricity, rest, moral suasion, cold baths, etc., and the very best fluid extract damiana, fully as to quality and time, but all in vain.

Case 4.—R. J., æt. 54, called August 2d, complaining of a gradual loss of health, weight and genital power. Here, too, we failed to discover any lesions of the genital organs. His seemed to be a case of general atrophy from debilitated digestion and assimilation, of several years' standing, which yielded kindly to local and general faradization after a few months' treatment. But his genital organs were still weak and impotent. Thereupon we placed him on liberal doses of fluid extract of damiana, which acted like a charm after a few weeks' administration. The first effects were to cause two full mushy stools per day, accompanied by an increasing appetite, and finally a restoration of his lost sexual power.

Case 5.—Mr. J. H , æt. 25, called January 2d, suffering loss of copulative power. Upon an examination of the urethral tract, the sound was arrested by two strictures at the prostatic portion of the urethra. The neck of the bladder was found irritable, with excessive mucal discharge. The strictures were gradually dilated by the appropriate instruments for that use; the bladder washed daily with a double silver catheter, using as a wash a weak solution of atropine. Internally administered gelse-

mium with the bromide of sodium. This was continued until the acute symptoms had subsided, when damiana was administered. The sound passed daily, through which a constant current of electricity was passed, from the sacrum to the end of the sound. In all, this treatment lasted about one year. Since then the young gentleman has married, and finds himself fully able to do family duty.

Says Tanner, "Spermatorrhœa is a deranged state of mental and bodily health, due to too frequent escape of seminal fluids. Masturbation is the most common cause."

Symptoms.—There may be only a separate escape of seminal fluid, or this may be associated with morbid changes in the vesicular seminales, ejaculatory ducts, bulbous portion of urethra and prostate gland. Urine sometimes rendered slightly albuminous by seminal fluid.

Case I.—S. T., of N. C., æt. 45 years, called June 12th, suffering from frequent loss of seminal fluid, due, as he said, to grief and sad reverses of fortune. The penis was small and flabby. Otherwise there was no lesion that could be found. His symptoms were as follows: General debility, with some emaciation; also much irritability. Complained of dullness of vision and of poor memory. Bowels constipated and flatulent, with occasional attacks of giddiness, headache and palpitation. In his case I suspected excessive venery, as he informed me that he had lately been in the habit of keeping a mistress who was greatly amative. The treatment of his case was rest, a change of scene, nourishing diet, as the hygienic measures. Medically—large doses of the fluid extract damiana, which was continued through the months of June and July, with the best of results, for his seminal losses ceased, he grew fleshy in body and better contented mentally. A few weeks subsequently he came to the city for the treatment of general rheumatic and neuralgic pains, which yielded kindly to quinine and electricity. He had been visiting a malarial district. His old trouble (spermatorrhœa) had entirely disappeared. The characteristics of damiana, viz., alterative effects on the alimentary canal, and the tonic effects upon the urino-genital organs were decidedly manifested in his experience.

It will be well at this juncture to call the attention of the profession to the remarkable and beneficial action of this new drug (damiana) in the various unhealthy or irregular discharges of the genito-urinary organs, in the female as well as the male. Several of my medical brethren have strongly testified in its favor in the treatment of sterility, when the uterus and its appendages seem to suffer simply from inertia. I found it an excellent remedy in cases of amenorrhœa, dysmenorrhœa and leucorrhœa.

Case II.—Mrs. B., æt. 28, called April 6th, suffering from amenorrhœa. Had been married several years without issue; as a consequence was unhappy and anxious, complained of excessive leucorrhœa, though apparently she was robust and healthy. Cheeks rosy, still she complained of nervous irritability, and had a dreamy and absent kind of manner.

Hygienic Treatment.—Moderate mental and bodily work; cheerful society; to avoid heavy meals; to sleep upon a hard mattress and alone, during treatment. Medically, ordered the use of fluid extract of damiana, teaspoonful doses, in milk, three or four times a day; to omit tea and coffee and other stimulants; to drink freely of milk and buttermilk. After pursuing this treatment two months all the symptoms improved; she became perfectly regular in her menses, became pregnant at the end of the fourth month after beginning the use of damiana, and was delivered at the end of regular time of a healthy boy.

Case III.—Mr. D. H., æt. 24, called January 7th, suffering from spermatorrhœa. He complained of loss of seminal fluid night and day, and particularly after he had passed his water or fæces. He attributed it solely to masturbation, and from his general appearance I judged he was correct. He, too, suffered from general weakness, nervous irritability, with a dreamy, absent kind of manner; flatulence and constipation; dullness of sight, and perhaps of hearing, weakness of memory, attacks of palpitation, giddiness, headache and neuralgia. He would keep his bed a week or two at a time, and frequently go days without eating or speaking a word to any one. This condition had existed for a year or more, when his father, fearful that the young man was about to lose his mind (judging from his eccentricities, and from many odd and unusual ways) called my attention to his case, when I obtained the above history. I placed him under the best hygienic influence, and required him to make daily calls at my office, when I used moral suasion and encouragement, endeavored to instill better idea, more manly thoughts and actions, to imbue him with brighter hopes for the future; also instructed his family to put themselves to greater efforts to make home attractive, cheerful and pleasant to him. Medically I relied upon our old and tried friend, the different preparations of damiana, with entire success, though in this case it required better than a year of skillful management to complete the restoration mentally and physically.

As to the combination with milk, I may casually say that all the preparations containing any resinous solutions, are more agreeably taken, and more readily assimilated when held in suspension in milk. I also would note that I have found all the bromide salts to be more ready for use and to give better results when held in solution in milk.

Case IV.—Mr. K., æt. 26, called an February 2d, suffering from chronic prostatitis and continued loss of prostatic fluids, dripping away from the head of his penis upon his underwear: The history of the case was that this trouble originated from a long neglected gonorrhœa, and frequent exposures to cold and unhealthy locations. His symptoms were pain and tenderness about the perineum, with a sense of heat and frequent efforts at passing water. He had pain on defecation, feeling of weight about the perineum and rectum, and experienced pain when passing the catheter. *Treatment.*—Perfect rest in bed; used belladonna to perineum; bromide in solution of milk as injections per rectum; simple nourishment without stimulus; all this until the acute stage had passed. Then I placed him upon damiana as an alterative and tonic, which treatment was maintained for several months, or indeed until all his unhappy symptoms had disappeared.

In conclusion I will state that these are only a few of the typical cases of chronic urino-genital diseases that have come under my observation during the past year or more, in which I have given this new remedy, damiana, (turnera aphrodisiaca), a full and fair trial. The results have been more satisfactory than from any other course that I have tried or had knowledge of in an extended experience in these troubles. I would most cordially solicit my medical brethren to give it (the genuine article) fully and freely in such cases as are named above, and report their experience for the benefit of the profession at large.—From report by John J. Caldwell, M. D., in *Virginia Medical Monthly*,, July, 1884.

The Nutritive Value of Food-stuffs.—The researches of Pettenkofer and Voit on the nutritive value of albuminates, fats and carbo-hydrates, and the part that each plays in the economy of digestion, metabolism and nutrition, will long take their place among the most brilliant examples of the triumph of the true scientific method, *i. e.*, of experiments ingeniously conceived and carefully carried out, so as to exclude or to neutralize each possible source of error, over the crude experiment, whether presenting itself casually or undertaken without previous adequate precautions, and the other alternative of deductive speculation, as seen in the observations or

experiments of Beaumont, Bidder, Schmidt, etc., on the one hand, and the attractive but dubious conclusions of Liebig and Frankland on the other: none of which are to be considered free from sources of error.

But if one were to judge from the way in which not merely popular, but more serious books on physiology and hygiene — nay, even university examination papers—occasionally refer to flesh-forming foods, to respiratory foods as sources of heat, and to the relative quantity of energy contained in given weights of any aliment, one would think that they were still unknown in this country. Yet the practical value of their results is so great, and the consequence of acting on the hypothesis of the aforesaid speculators might be so serious, that it will not be a waste of time to review the present state of our knowledge on the subject of dietetics.

Liebig, whose fertile imagination led the way to discoveries of the highest importance, although the same discoveries often brought about the rejection of the hypothesis which first suggested the lines of investigation, proposed the earliest rational doctrine of nutrition. In his researches on the food of plants, which have revolutionized agriculture, created new industries, and increased the food-producing capabilities of the Old World, he showed that we could learn from the composition of the vegetable ash what minerals entered into the constitution of the plant, and by supplying them in the right proportions, enable almost any soil to carry any crop. From this he reasoned to the animal, with this difference, that the latter must have his food provided already in the complex organic forms of the albuminates, carbo-hydrates and fats. Since nearly all tissues contained nitrogen, it was evident that they could be built up and restored only by nitrogenous materials; that is, that albuminates alone could be applied to tissue formation. So far he was right; but when he began to speculate as to the actual processes of nutrition, he went wrong.

Recognizing in metabolism the only source of functional activity, he assumed that each organ, in the exercise of its functions, consumed a certain proportion of its substance, and that, consequently, albuminous nutriment must be provided in direct proportion to the activity put forth. Albuminates he distinguished as plastic or flesh-forming food; the fats and carbo-hydrates he considered to be no more than fuel for the production of heat, and he therefore called them respiratory food.

According to this theory, the elimination of urea should be proportioned to the amount of energy put forth, and also to the quantity of albumen in the food. But such is not the case. For a short time the difficulty was met by the theory of luxus consumption, which assumed that, when more albumen was ingested than was required for the repair of the tissues, the excess underwent combustion in the blood with evolution of heat, thus playing the part assigned to the carbo-hydrates and fats. The measure of the necessary albumen was inferred from the excretion of urea observed during abstinence from all nitrogenous food.

Moleschott raised the first protest against the speculations of the famous chemist; but it was Voit who demolished the whole theory, by showing that albuminous metabolism is not increased by exercise, and that the albumen metabolized by a fasting animal is insufficient, even when combined with the due proportion of carbo-hydrates and fats, for the maintenance of life; while severe muscular exercise does not augment the excretion of urea, though it does that of carbonic acid enormously.

Voit's experiments clearly point to the conclusion that the greater part of the albumen taken in the food is accumulated *pro tempore* in the general fluids of the body, whence so much is withdrawn by the tissues as is required for their repair, and that this fluid albumen is far more easily metabolized than that which has already entered into the structures. In a previously well-fed dog the daily excretion of urea during the first days of fasting was no less than sixty grammes; but when the stock of free albumen was exhausted, it sank to ten or twelve; while in one that had not previously had more than was necessary for the maintenance of the *status quo*, the excretion never exceeded fourteen; since the hardly metabolized organized albumen had to be drawn on almost from the first. The increased excretion of urea, in certain pathological conditions, is owing probably to the loosening, as it were, of the bonds of the albumen in the tissues, which is thus brought into the easier metabolized condition of the dissolved albumen. In health, a certain excess of albuminous food above the actual needs of the tissues—in other words, an ample stock of albumen, dissolved in the juices of the body—appears necessary to great functional activity, and to afford the power of resisting injurious influences, as exposure to the elements or disease; but if the ingestion of albumen be continued in greater excess, the surplus is immediately subjected to metabolism, the excretion of urea depending on the albumen ingested, and not on the amount of muscular activity, as Liebig supposed. Yet albuminous metabolism can never be entirely suspended, and is practically the same in animals fed entirely on non-nitrogenous food as in those actually starving. Albumen alone can, however, maintain life, though not health, for a considerable time, and can thus replace the fats and carbo-hydrates, whereas the converse is not the case.

The experiments of Pettenkofer and Voit, of Plosz and Gyorgyai, Maley, Latschenberger, and others, tend to the conclusion that peptones can entirely fulfill the functions of albumen, while they are more easily metabolized than the unaltered albumen, whereas gelatine can replace it so far only as regards metabolism, being incapable of entering into the formation of the tissues. The clinical value of these facts is obvious.

The impulse to metabolism seems to proceed from the cells themselves, and to be more of a vital than of a chemical character; the oxygen combining rather with the products of the splitting up of the food-stuffs than directly and primarily with them, as Liebig taught. Thus, in the opinion of Franke, an increased destruction of tissue is actually induced by a deficiency of oxygen in the system; at any rate, this is certain, that there is little or no relation between the facility with which any given substance combines with oxygen, *i. e.*, burns in the air, and under the totally different conditions under which it finds itself in the animal body. Thus fats are clearly less easily metabolized than carbo-hydrates, and albuminates are far more so than their slow combustibility would lead one to anticipate. Albumen splits up into products, one of which is fat, and the others, immediately or remotely, carbonic acid and water. It is, therefore, the probable source of the fat stored up in the body; and the apparent fat-producing power of carbo-hydrates is owing to their easy metabolism effecting a saving of the albumen which would otherwise have been employed in the production of heat and force.

Experiment on the living animal shows this very clearly. For instance, a dog which, on a diet of 1,000 grammes of pure flesh and 500 of fat, gained weight for over a month, began to lose weight when the flesh was increased to 1,500 grammes, without a corresponding increase in the non-nitrogenous food. And again, Frankland's estimates of the energy contained in equal weights of each article of food, based on the heat given off in their combustion, are not confirmed by experiment or by common experience. These points cannot be determined *a priori* by chemists, but must be decided by carefully conducted physiological experiments. It is, we repeat, by the influence exerted on the vital cell-processes that metabolism is increased or diminished, rather than by an act of substitution; thus, while alcohol, the most combustible out of the body of all foods, but by no means the most easily metabolized in it, in large doses depresses that action and lessens tissue-change

albumen, hard to burn, but most easy of metabolism, excites it almost in direct ratio to the quantity ingested, or rather to the proportion it bears to the other food-stuffs. We are far from maintaining that every conclusion of the Munich physiologists is beyond criticism, but they are clearly working in the right direction, and their results must lead to a great change in our views and practice, especially in the dietary of the sick-room, and in our ideas of the value and action of alcohol.—*British Med. Journal.*

The Use of Naphthaline as an Insecticide.*—Naphthaline, in one form or another, has for some time been used by entomologists as a means of preventing injury to their collections from acari, psoci, dermestes, anthreni, and other museum pests. My own experience is that it destroys the acari and psoci, but not the other pests, though it tends to repel them. Recent investigations would seem to indicate that it may be used to advantage in the field as an underground insecticide. It appears that as early as 1842 a French physician, Rossignon, pointed out the possible use of naphthaline not only as a remedial agency in medical practice, but also as a substitute for camphor for the destruction of museum pests. But up to the appearance of the grape phylloxera in France no serious experiments were made with it in the field. Among the substances tried against this pest, naphthaline played its part. The efficient ingredient in the "poudre insectivore" of Peyrat, was, according to Maurice Girardi, naphthaline; but the experiments with it did not yield encouraging results.

Baudet recommended it to the French Academy in 1872, while in 1874 E. Falliers proposed gypsum saturated with naphthaline, the mixture to be distributed over the soil. It was also among the numerous substances experimented with by Messrs. Maxime Cornu and P. Mouillefert, the results of which were published in the well-known memoir presented by these gentlemen to the French Academy in 1877. Naphthaline, up to this time, proved to be of little value in killing the insect, and of no value as a repellant. Nevertheless, Dr. Ernst Fischer, of the Strassburg University, encouraged and induced by the most favorable results obtained with naphthaline as an antiseptic and as a destroyer of micro-organisms (moulds, schizomycetes, bacteria, etc.), has, since 1881, again experimented with it as a direct remedy for the phylloxera; and he has given us the results of his experience in an interesting *brochure* lately received. The first part of Dr. Fischer's work treats of, and strongly recommends, the use of naphthaline for surgical purposes, as an antiseptic superior, in most respects, to all other antiseptics now in use. His conclusions are based on extensive experiments showing the effect of the material on the lower organisms, and prove that, properly used, it not only arrests the growth of these micro-organisms, but eventually destroys them. This part of the work will be of especial interest to those who are experimenting with a view of destroying disease-germs. It is to the second part that I would here call attention. Preliminary to a statement of the results of this part part of Dr. Fischer's work, a few facts in regard to the nature of the substance may not be out of place.

Naphthaline, a carbohydrate of the formula $C_{10}H_3$, was first made in 1820, by Garden, from coal tar. It is volatile at any temperature, melts at 79.2° C., boils at 214° C., and has a specific gravity of about 1.1. Essentially insoluble in water, alkalies and diluted acids, it is easily soluble in ether, hot alcohol, hot concentrated sulphuric acid, and in many volatile and rich oils. It is readily carried off with aqueous vapors, so that in order to quickly disinfect a room, it is only necessary to heat a vessel with water in which naphthaline has been put. The naphthaline gas mixes very readily with atmospheric air, and is also readily taken up by water. It is not poisonous to man or to the higher animals, and for surgical purposes should be used chemically pure. The crude material is by far cheaper, and upon inquiry Dr. Fischer found that in London it can be obtained, without barrels, at 25 marks (6 dollars) per 1000 kilogrammes (about 2200 lbs.), in Paris at 100 francs, and in Cologne at about 45 marks (barrels included). The crude naphthaline contains more or less phenol and creasote, and is a stronger insecticide than the purified article, but also more injurious to plants. Dr. Fischer used the purified naphthaline in his experiments on phylloxera, but thinks that with some precaution the crude material might safely be used, especially if it is not brought in direct contact with the plant, or if used in the dormant season.

The experiments with phylloxerized grape vines were carried on under direction of Dr. Fischer, at La Grave d'Ambares, near Bordeaux. Fifteen badly infested stocks,* partly growing on light, partly on heavy soil, were treated in April, 1883.

It was placed in a hole dug in the ground near the main root, and subsequently covered up; and the quantity used was on some plants one, and on others one-half kilogram. On September 18 the plants were examined with the following results: All plants experimented with, but especially those treated with the largest quantity of naphthaline, showed a new and healthy growth of numerous long, fine rootlets, which were perfectly free from phylloxera; in fact, the phylloxera had entirely disappeared from the roots of all plants experimented with, whereas several plants not treated with naphthaline showed no young growth of rootlets, and an abundance of phylloxera. The growth above ground of the plants treated showed no difference as compared with plants not treated—a fact explained by insufficient time for the treated plants to recuperate. Some of the most vigorous new rootlets were found to have penetrated the layer of naphthaline, thus showing that the latter has no injurious influence upon them. A considerable quantity of the naphthaline was found unchanged at the date of examination, which shows that the evaporation is very slow, and that its effects will be correspondingly lasting.

The results are certified to by official affidavits, and were more marked on plants growing in heavier and moister grounds than on those in light and gravelly soil.

As the most convenient mode of application, Dr. Fischer recommends that about 1 kilogram of the naphthaline be put in a trench dug around the plant a few inches from the stock; the trench to be not less than from 15 to 20 centimetres deep, and to be at once filled up again. He attributes the failure of former experiments: 1. To the small quantity of material employed. 2. To its being employed too near the surface of the ground, so as to permit evaporation in the air. He also thinks that results were expected after too short a lapse of time.—*Pharmaceutical Journal and Transactions*, June 7, 1884.

Parasites of Meat and Prepared Flesh-Food.—In his second lecture at the International Health Exhibition, Dr. Cobbold treated of the cestoid parasites and their larvæ—that is to say, of the tapeworms and bladder-worms, such as hydatids, measles, etc. Meat sent to the market was liable to contain these entozoa; neither beef, veal, pork, nor even mutton and venison being altogether free. On seven separate occasions he had noticed cysticerci in joints of mutton brought to his own table, and he had described similar parasites from the flesh of a giraffe as well as from common animals. As an argument in favor of hippophagy, it should be stated that horseflesh was singularly free from parasites of this class,

* 'Das Naphtalin in der Heilkunde und in der Landwirthschaft.' Von Dr. Med. Ernst Fischer. Strassburg: Trubner, 1883. Reprinted from the Oil, Paint and Drug Reporter, May 14, 1884.

* It is not stated whether the roots of these stocks were examined at the time, to ascertain whether or not the phylloxera was still at work.

although other tissues, as well as the viscera of equine animals generally, were apt to contain bladder-worms. None of these equine parasites, however, was injurious to man. Having (by means of Sheet No. 3 of the illustrations displayed in the South Gallery) explained the general structure and development of the beef tape-worm, the lecturer dwelt at some length upon the dangers arising from dispersion of ova by the employment of fresh sewage, and upon the inestimable value of experimental research in determining the mode of origin of the different species of tæniæ that attack man and beast He referred to the labors of Leuckart, Mosler, and various other Continental helminthologists; but he stated that in this particular matter he had conducted more experiments than any one of his foreign co-workers. Reverting to the prevalence of measly beef, it was shown that out of 13,818 beasts slaughtered in the Punjab, in the year 1869, as many as 768 animals were infested with cysticerci. This would be at the rate or 5½ per cent. (5·55). The percentage of the previous year was higher. Passing to the ravages of the pork tape-worm, its comparatively dangerous character was noticed, not a few instances having come under Dr. Cobbold's observation where the cysticerci were lodged in the human brain. Allusion was made to the Mosaic inhibition of swine's flesh, and to the extraordinary prevalence of measly meat throughout the East. In reference to the liltle tapeworm which proved to be the sexually mature state of ordinary hydatids, he referred to the experimental labors of Von Siebold, Naunyn, Nettleship, and others. Reverting to hydatids, a singular experience was related in connection with a plate of meat that had been brought to him at a public restaurant. The relative prevalence of the echinococcus veterinorum in England, India, Australia, and Iceland was next referred to, special stress being laid upon the investigations of Dr. J. D. Thomas, of Adelaide. As regards India, it was stated on the authority of Dr. James Cleghorn, that of 2109 beasts slaughtered at Moolton 899 were diseased, and in most cases both the lungs and liver were affected. This was equivalent to 42 per cent. If asked how this was to be accounted for, the reply was, that the cattle in India had ready access to tanks containing foul water, and they had frequently been seen to swallow refuse and garbage, in which tapeworm eggs abounded. The ova of the tænia echinococcus, expelled by dogs, must be very thickly dispersed throughout the low grounds of India. As regards preventive measures, Dr. Cobbold insisted upon a more thorough meat-market inspection by competent persons—that is to say, by inspectors who have familiarised themselves with the phenomena of parasitic disease. It was useless to say that officials in general were already well-informed on this subject, inasmuch as he had been supplied with abundant proofs to the contrary. During the last thirty years he had received several hundred private communications on the subject of parasites, many of the applicants for information being officers of health. In one instance the cut ends of the intercostal nerves had been mistaken for parasites, and thus meat had been condemned without good cause. In connection with the temperature necessary to destroy the measles of beef and pork, Dr. Cobbold again emphasized the labors of Professor Perroncito, showing that none of these creatures could survive a heat of 50° C. or 122° F. prolonged for a single minute At this point of the lecture Mr. Birkbeck, M. P., handed to the chairman a paper requesting information respecting the so-called "mackerel scare," in reply to which it was affirmed that that the entozoa of this fish were perfectly innocuous to mankind, whether they were swallowed alive or dead. The parasite most commonly encountered was the Filaria piscium; but there were eleven other internal guests of the mackerel, besides two which fastened themselves on to the gills. Addressing himself in a very pointed manner to those who eschewed flesh food altogether, the lecturer remarked that the vegetarians flattered themselves that by abstention from meat they escaped many of the parasitic ills to which flesh is heir. So they did; but, speaking figuratively, they "jumped out of the frying-pan into the fire." At all events, the most common parasite known in England was almost entirely nourished by the cellulose and protoplasm of vegetables, and it was by means of vegetable diet, and by the careless use of unfiltered water employed in the washing of salads and other herbs, that certain parasites were introduced into the human frame. Some parasites might be starved by a milk diet, but he feared the same could not be said in favor of an exclusively vegetable diet. Be that as it might, instances had come within his knowledge where the employment of open running waters for domestic purposes had led to local edemic outbreaks of parasitism. He instanced the case of a Yorkshire village, and explained its nature, the passage of entozoal germs from neighboring piggeries into a little brook being the immediate cause of infection.

At the close of the lecture Sir Lvon Playfair remarked that before he had taken the chair he had been inclined to think that as regards entozoa it was perhaps better to remain in blissful ignorance than to be made acquainted with the disagreeable but highly important facts that had been detailed. He had, however, changed his mind, and now thought that we all owed much to Dr. Cobbold and other workers in this branch of science. It was a pleasure to himself to have presided at a lecture given by an alumnus of the University which he represented in Parliament. —*Lancet*, July 5, 1884.

The Comparative Action of Coca and Caffeine. —In view of the remarkable discrepancy between the published statements of various observers as to the action of coca, a writer in a recent number of the "Ephemeris of Materia Medica," etc., has entered upon a course of experiments with several drugs reputed to have very much the same physiological action, and all characterized by the property of preventing sleep under certain circumstances. It is generally admitted, and is probably true, the writer remarks, that the same power in these agents which refreshes, recuperates, and sustains, in the condition which needs or requires such effects, also counteracts the tendency to sleep, or produces wakefulness when a tendency to sleep exists, and, therefore, if a tendency or disposition to sleep could be prevented by these agents, this tendency might be used as a measure of their effects when used in varying quantities, and thus the agents be measured against each other fore, dose, or quantitative effect. The proposition was to first measure coca against tea, then coffee against guarana, and finally to compare the four agents, using the pure caffeine as a kind of standard to measure by.

An opportunity for such trials occurred in a healthy individual sixty-five years old, not habituated to the use of either tea, coffee, tobacco, or any other narcotic substances, of good physical condition and regular habits, and not very susceptible or sensitive to the action of nervines or so-called anti-spasmodics. Quantities of preparations of valerian, asafœtida, compound spirit of ether, etc., which would yield a prompt effect upon many individuals seemed to have little or no effect upon him, nor did moderate quantities of wine or spirits stimulate him. In short, he had not a very impressible nervous organization, was not imaginative, nor very liable to accept results on insufficient or partial evidence. Fully occupied with work, both physical and mental in due proportion, for more than ten hours every secular day, when evening came he found himself unable to read long, on account of a drowsiness supposed to be of a purely physiological character. With a full breakfast at about 7.30, a full dinner at about 2.30, and a light evening meal about 7, and no stimulants or tea or coffee at any time, he found, as a matter of not invariable but general habit, that by half-past eight drowsiness became so dominant that it was almost impossible, and generally impracticable, to avoid falling

asleep in his chair while attempting to read, even though ordinary conversation was carried on around him.

The first trial to combat or prevent this drowsiness was made with caffeine. The first specimen used was a very beautiful article made by Merck, of Darmstadt, and after that pure specimens made for the purpose, the two kinds being found identical in effect.

Beginning with a one-grain dose at about 6.30 P.M., on alternate evenings, leaving the intermediate evenings in order to be sure that the nightly tendency still persisted, and increasing by half a grain each alternate evening, no very definite effect was perceived until the dose reached 2½ grains, and this dose simply rendered the tendency to sleep resistible by effort. After an interval of three evenings, with the tendency to sleep recurring with somewhat varying force each evening, a dose of three grains was taken—the maximum single dose of the German Pharmacopœia. This gave a comfortable evening of rest, without sleep or any very strong tendency to it until ten o'clock. Without anything to counteract sleep, the rule was to read with difficulty by nine, without much comprehension by a quarter past nine, and either be asleep or go to bed by half-past nine. The 3-grain dose of caffeine repeatedly obviated all this discomfort up to ten o'clock, but did not prevent the habitual prompt and sound sleep from the time of going to bed till morning.

This was the model established, upon and by which to measure all the other agents, and they were never taken nearer than on alternate evenings, with occasional longer intervals, especially when the final doses of record were to be taken.

The next agent tried in precisely this same way was coca, and, as it was known that the quality of that which was attainable was very low, the commencing dose of the leaf in substance was 2 drachms, or about 8 grammes. This gave no very definite effect, but 2½ drachms did give a definite effect, and a subsequent dose of 2½ fluidrachms of a well-made fluid extract of coca gave about the same effect as 2½ grains of caffeine. Three fluidrachms of the fluid extract were about equivalent to three grains of caffeine.

The writer's investigation of coca is not yet finished, but he has abandoned it for the present.—*N. Y. Med. Jour.*, Aug. 2, 1884.

Erythroxylon Coca in the Treatment of Syphilis.—Of the many excellent works on venereal diseases few hold a higher place in the estimation of the medical profession in this country than that on their pathology and treatment by Bumstead and Taylor. The fifth and last edition, published in 1883, more than sustains its reputation, being revised and rewritten by Dr. Taylor, now the sole author, with many additions and improvements. In his preface the author says:—"Much new matter will be found relating to therapeutics, and in the chapter on the treatment of syphilis a new adjuvant is spoken of, which I believe I have the honor of now introducing to the profession." At page 873 we have full details as to what the new adjuvant is—"I have used very extensively during the past three years, in private and hospital practice, as an adjuvant in the treatment of syphilis, the fluid extract of erythroxylon coca, and I have come to regard it as one of the most valuable agents at our command, indeed, I know of no remedy which can take its place. I would not be understood as claiming that the remedy is a specific for syphilis, for such it is not, but that its marked tonic effect upon the heart, the nervous system, and capillaries, and its power to invigorate the system, to improve nutrition, and to sustain life, is so great that its use in syphilis, secondary to that of mercury and the iodide of potassium, is attended with results which no other agent now known to us possesses. It is especially useful in the anæmia and cachexia of the secondary period. . . . One point has struck me very forcibly in its use, and that is, that when taking it mercury can be pushed without bad results. Indeed, it seems to me that when this remedy is given mercury can often be used in larger doses, and is more efficacious than when it is not used. . . . . Again, patients who have been for years accustomed to quite copious drinking can be often made to partake very moderately and suffer no serious effects from the deprivation, so long as they take the coca. Under these circumstances, I think that I am warranted in bestowing the enconiums I now do on this great adjuvant remedy, which is alike beneficial for the old and young of both sexes. The dose to begin with is generally half a drachm. My favorite formulæ are as follows:—

℞ Fl. ext. erythroxylon coca, ʒ ij.
Tinct. cinch. co.
Tinct. gent. co., ana ʒ j.

M. Dose.—Two teaspoonfu's, in a wine-glass of water, three times a day, one hour after meals.

℞ Fl. ext. erythroxylon coca, ʒ ij.
Tinct. gent. co.
Tinct. cinchon. co., ana ʒ j.
Elix. calisayæ, ʒ iv.

M. Dose.—Two teaspoonfuls, in a wine-glass of water, three times a day, one hour after meals.

I regret that my attention has been so recently called to this new remedy that I have only been able to give it a trial in a very few cases, and my object in writing this paper is to call attention to it, in the hopes of eliciting more extensive experience in some future number of this Journal. So far, I have reason to be very well satisfied with it, and I have experienced nothing to prevent my continuing to prescribe it in suitable cases. In several cases of very persistent sore throat and tongue it has apparently been of great benefit, and patients have expressed themselves most favorably of it. The dose given in America varies from half a teaspoonful up to one or two teaspoonfuls, seldom higher.

In the 13th edition of Squire's *Companion to the British Pharmacopœia*, published in 1882, this new remedy is thus described:—

"Not officinal
Coca.

"The leaves of Erythroxylon Coca from Bolivia. They resemble the leaves of tea, but have a slightly visible curved line on each side of the mid-rib.

"They are chewed by the natives to sustain them during the day, and that they may defer eating till the evening. The author has been presented with some of it by Dr. Sieveking, and it has been tried, but the reports from the several experimenters in this country are not promising; it is said to produce a gentle exciting effect, with a disposition to sleep, not followed by languor or depression.—Frederick W. Lowndes, M. R. C. S. Eng., in *Liverpool Medico-Chirurgical Journal*, July, 1884.

Sierra Salvia in Remittent Fever.—Some time ago I saw the idea advanced that mountain sage (artemisia frigida), or, as it is pleasantly called in the Spanish tongue, "sierra salvia," was an excellent substitute for quinine; and, as a substitute, possessing positive power for quinine, would be very valuable; indeed, I determined, having secured some from Parke, Davis & Co., the enterprising chemists, to give it a thorough trial. I am now very well satisfied that it is a remedy possessing pronounced antimalarial qualities, similar to the cinchona bark and preparations; and I wish to report three cases, taken from several, in which I used it successfully:

Case 1.—I was called, October 2d, to see R. B., æt. about 40, living near Onion River. Found patient in high fever, tongue broad and coated dirty whitish yellow, pulse full and bounding, constipated bowels, severe headache, pains in back, vomiting occasionally, morning remissions, etc. Veratrum

vir. tinc., in two-drop doses, every half hour, was administered, until abatement of temperature, then quinine. The quinine was promptly rejected by the stomach. I then ordered:

℞ Tr. veratri, gtt. xx.
Fl. ext. sierræ salviæ, ʒ ij.
Aquam. q. s. ad., oz. iv.

M. Sig. Teaspoonful every two hours.

Saw patient next day, and found him much better. Continued treatment.

Saw him on 5th, still improving. Ordered soups, etc. Left powder to move the bowels.

Saw patient again on the 7th; found him sitting up. Tongue clean; appetite good. Dismissed him.

Case 2.—Precisely like Case 1. Treatment and results same.

Case 3.—Mrs. H., æt. about 30. Had premonitory symptoms of ordinary remittent fever for two days, when a pronounced attack set in. I was called twenty-four hours later. Found her delirious; pulse small, but tolerably soft; face flushed; eyes bright, with slightly contracted pupils; bowels regular; tongue narrow, elongated, with edges very red; great tenderness over region of stomach, occasionally vomiting. Ordered:

℞ Fl. ext. aconite, gtt. xxx.
Fl. ext. gelsemii, ʒ j.
Aquam, q. s. ad., oz. iv.

M. Sig. Tablespoonful every two hours, alternating with:

℞ Acidi hydrochlor. dilut., ʒ ss.
Syrup simplicis, ʒ . iij.

M. Sig. Sip *ab lib.*

Saw the patient next day, and found conditions better. Treatment continued.

Saw patient again the next day; pulse of better volume, still accelerated; tongue decidedly changed for the better. A good morning remission.

Saw her again next day, in evening; pulse 90, moderately soft; tongue normal; appetite returning. Acid treatment stopped. Sedatives continued, with two five gr. Dover's powders during the night. Left the following formula, for to begin next morning early:

℞ Fl. ext. sierræ salviæ, ʒ ij.
Tr. nucis vomicæ, gtt. xv.
Aquam. q. s. ad., oz. iv.

M. Sig. Teaspoonful every two hours.

Saw patient two days later; found her sitting up; clear of fever; appetite fair; bowels slightly constipated. Dismissed her.

I submit these cases for what they are worth, not claiming any originality in the use of the drug. I wish to say in this connection that the remedy was used where I earnestly thought quinine was inadmissible.—Francis A. Evans, M. D., Newbern, Tenn., in *Nash. Jour. Med. and Surg'y.*

Manaca (Franciscea Uniflora.)—It is claimed that manaca is cathartic, diuretic, emmenagogue, anti-syphilitic and anti-rheumatic, or in other words, an especial remedy in rheumatism. It is its use as a remedy in rheumatism that I wish to call the attention of the readers of the Kansas Medical Journal to. I have been using manaca as a remedy in rheumatism now nearly two years, and must say that it has given more satisfaction than any other remedy I have ever employed in treating chronic rheumatism. One thing in its favor, it is pleasant to the taste, the dose is small, there is very little disagreeable feeling following its use. The greatest thing in its favor is the promptness of its action. If it is going to prove curative in a given case it will not be many days about it. Writers do not lay down any special indications for its use. Only the general term chronic rheumatism is given as an indication for its employment as a remedy in rheumatic affections. "The term acute rheumatism is unmistakable, but that of chronic rheumatism is vague and prone to lead to error, for it may imply rheumatoid arthritis, articular or muscular rheumatism. Ordinarily this distinction is clearly drawn and essential that the pathological changes may be known and the remedy selected. Unfortunately the reporters of manaca in rheumatism have ignored this distinction."

My opinion is that it is more certain in chronic muscular rheumatism, than either of the other varieties, as it has direct action on the diseased muscle, though I have good results from its use in chronic articular rheumatism. I have used manaca in twelve cases altogether; in ten it was curative, in two it did no good. I will give only three cases as an illustration of its use.

Case one. Mrs. C. has been afflicted with chronic muscular rheumatism for two months, getting worse all the time; not able to do any work, complains of being "stiff and sore all over."

Prescribed F. E. manaca, ʒ j. Dose gtt. xx, three times a day. In four days "soreness" all gone, patient felt well. One ounce of the F. E. taken. No return of the disease in six months.

Case two. Mrs. B., lumbago. She was not able to do any work, hardly able to rise from chair.

Prescribed F. E. manaca, ʒ j. Dose gtt. xv, three times a day, increased to gtt. xxx. Patient was able to work in two days. One ounce of the medicine was taken with no return of the disease in eight months.

Case three. Mr. A. B., æt 56. Has had chronic articular rheumatism for two years, gradually getting worse; joints of right hand and fingers enlarged, sore and painful, aching of bones of legs and back.

Prescribed F. E. manaca, ʒ ij. Dose gtt. xx, three times a day. Commenced to improve as soon as he commenced to take the medicine. By the end of first week he felt well. He took one and a half ounce of the medicine and declared himself well. It is now eight months and no return of the disease. —Dr. J. Berger, in the *Kansas Medical Journal.*

Ergot in Gynæcology.—Ergot is used in gynæcological practice chiefly with three objects: One is to effect a reduction in the size of the uterus by promoting the contraction of its muscular elements and reducing the caliber of its blood-vessels; another is to check uterine hæmorrhage; and a third is in the treatment of interstitial and submucous fibroids. I would say that for nearly two years past I have employed the preparation of ergot made by Parke, Davis & Co., under the name of "Liquor ergotæ purificatus," (normal liquid) and which I first tried on the recommendation of Dr. T. A. Emmet, who found it less nauseous and commonly better borne by the stomach than the fluid extract of the pharmacopœia. I have seen no reason to doubt its efficiency, and have met with few complaints of difficulty in taking it. Ergot, when given with the first object, has been eminently unsatisfactory. The cases in which I have used it have been mainly those of subinvolution, often associated with a greater or less degree of laceration of the cervix. In combination with the ergot, the local treatment has usually aimed at an unloading of the vessels of the uterus by the action of glycerin tampons and stimulating the blood-vessels to contract by the hot douche. Even after the use of the drug had been continued in some instances for many weeks, repeated measurements with the sound showed little or no decrease in the length of the organ, although the general symptoms of the patient and the appearance of the vaginal portion of the uterus indicated improvement. Patients with subinvolution, thus associated with and doubtless referable to lacerations of the cervix, are not apt to present themselves at the hospital until months after the confinement at which the injury was received—after a period, namely, during which the hæmorrhages, the leucorrhœa, the displacements, or other results of the

original lesion have been developed, and have become the incentives which brought the patient for treatment. By this time the reconstructive impulse in the uterine fibres which exists after delivery and effects the involution of the organ has well nigh ceased, and the fibres no longer respond to the stimulus of ergot, to which they were so sensitive at an earlier period. I can hardly say that I have proof of the value of ergot given simply to arrest uterine hæmorrhage, although there are many cases in which I should feel that I was not right in withholding it. Still, in these same cases other measures, such as the hot douche and swabbing the uterine canal with tincture of iodine, are likewise resorted to—the effects of which are more palpable—so that one remains uncertain what the share of the ergot has been when the flow is checked. Few cases have presented themselves where the third use of ergot could be observed. The greater number of such probably will find their way in hospital wards, and I have nothing to report in this connection.—From paper by Dr. H. Emerson, in *New York Medical Journal*, August 9, 1884.

Convallaria Majalis.—This new candidate for medical favor has in all probability been in use for several hundred years. A writer in the British Medical Journal relates having read an account of the use of this drug in cardiac disease in an Italian book published as far back as the seventeenth century. Its modern and more rational use, however, does not date back farther than 1882, when it was again noticed by Prof. Germain Sèe. Its physiological and therapeutic action was then investigated, and the facts established that while its effects on the heart and arteries are similar to those of digitalis, they are still not identical, and that its use is free from some of the inconveniences and disadvantages of digitalis. Chemical investigations showed that it contained two glucoside principles of very different and somewhat antagonistic action, and these, convallarin and convallamarin, were used separately, and the latter alleged to be the cardiac agent.

In view of the discordant reports on this agent, it was desirable to investigate practically the claims of convallaria. If simply a duplicate of digitalis, the over-loaded materia medica were better without it, but if possessed of different or better properties, it should be fairly tried.

After some unsuccessful experiments with roots from cultivated specimens of the plants, preparations were made from wild flowers and stalks with little better or more definite results. A fluid extract was then prepared from some imported wild root, with a menstruum consisting of diluted alcohol, which seemed to make a satisfactory preparation. The experience of several competent and careful observers is still at variance, but tend to show that convallaria is not a simple duplicate of digitalis, nor adapted to supersede that important agent. Its use may serve, however, to discriminate between cases which have hitherto been classed together, and all treated by digitalis because there was no other agent that was applicable to any of the class. Extended and careful observation will be necessary to demonstrate the value of convallaria and its therapeutic status. The dose of convallaria (that is, the quantity required to produce the desired physiological effect which varies in different cases) is from five to six grains, or minims of the fluid extract repeated every four hours, or until some effect is obtained. There is little doubt but that a well made fluid extract of the root collected at the proper season represents the drug more uniformly than any of the active principles, as in all drugs in which the medicinal activity is not due either to alkaloids or acids, but to glucosides, it is pretty certain that these latter do not fill the place of the whole drug.—*Squibb's Ephemeris.*

Physiological Action of Condurango.—In a memoir contained in the last part of Foster's Journal of Physiology, Dr. Lauder Brunton gives the results of his experiments to determine the physiological action of Condurango. This bark is employed in the domestic medicine of the tribes occupying the northern half of South America, as a remedy against cancerous and syphilitic diseases. The condurango liane (or creeper) bark from Ecuador is yielded by a plant named the Conolobus cundurango, and belongs to the Natural Order of the Asclepiadaceæ, an order of acrid and stimulating plants, which, although some, like the cow-tree of Ceylon (Gymnema lactiferum), yield a milky and wholesome juice, yet, as a rule are suspicious; many, like the Tylophora and Secamone having emetic roots, whilst others, like the Asclepias decumbens, are diaphoretic and sudorific, causing abundant perspiration, without any increase of general temperature. The condurango is a climbing plant, with a stem of the thickness of from one to three inches, and large cordate leaves. The bark is in thin, curled pieces, about three inches in length, and of a greyish color. Under the microscope the tissue presents small cells containing starch, and glands filled with calcium oxalate, traversed by lacteals with cloudy-brown contents. Although gonolobus macrophyllus is reputed to have furnished the North American Indians with a juice to poison their arrows, condurango does not seem to have any very active properties, for Dr. Brunton found that watery extract of condurango has no action on frogs, even when injected into the dorsal lymph-sac in doses of five grains. On rabbits it has no poisonous action when injected into the peritoneal cavity. When a solution containing fine particles in suspension is injected into the jugular vein, the animal dies with symptoms of opisthotonos. When the coarser particles are removed this does not occur, although the breathing is quickened. Dr. Brunton thinks it is not improbable that the quickening of the breathing is due to the lodgments of fine particles in the pulmonary capillaries, and that the opisthotonos he noticed in one experiment, and which has been supposed by Gianuzzi and Bufalini to be due to the direct action of condurango on the nerve centers, was really due to asphyxia caused by pulmonary embolism. Unlike quinine, condurango has very little effect on reflex action. Condurango when injected into the peritoneum, even in large doses, has no action on the blood-pressure. Finally, it does not exert any definite action on the arterioles, nor does it paralyze the peripheral terminations of the vagus.—*The Lancet*, May 3, 1884.

Treatment of Granular Conjunctivitis with Jequirity, Associated with Nitrate of Silver.—By Coppez. (*Societe francaise d' ophthalmologie*).—He praises highly this Brazilian remedy for his very great success in inveterate pannus. Most of the results may be called brilliant. He has never seen an evil result; he has never seen a well eye affected by the purulent secretion of the jequiritic eye. He aids the action of jequirity, by an occasional cauterization with nitrate of silver. He publicly thanks M. De Wecker, the propagator of this new remedy, in behalf of the "granular and pannose Belgians."

M. Menacho, also makes a communication laudatory of jequirity, he says it can be applied with great advantage in certain affections of the cornea, such as torpid ulcers, scrophulous pannus, sclerosis consecutive to parenchymatous keratitis, etc. Jequirity acts in stimulating the nutrition of the cornea; it also abates considerably intra-ocular tension.

M. Vallez confirms the favorable opinion of Coppez of jequirity; M. Abadie also coincides in the same views, but adds, that a constitutional diathetic treatment should be combined with it.

Nicati thinks that the indication for jequirity should be precisely described, he found it most appropriate in grave cases of pannus, when the cornea is all covered with blood vessels.

Ferson, says in using jequirity we must patiently

wait ere reporting the final result. Its opponents were too hasty in proclaiming failures.

Nachet brings a tribute of praises of this Brazilian remedy; he reports complete success in 11 cases.

Gayet reports failures in 33 cases: they were all children.

Bancheron rejects jequirity in all mild cases; he prefers oxygenated water; in severe cases he is more satisfied with it.

Panas is partial to jequirity, but only in grave cases.

Chibert thinks age and climate have much to do with the treatment of trachoma; recurrences are not as frequent in youth as in advanced life; in some countries it is more stubborn than in others.

De Wecker thanked the society for the frank expression of their views; he reiterated his faith in jequirity, and ascribed the pathogeny of jequiritic inflammation to the action of arrobic microbes.—*St. Louis Medical and Surgical Journal*, June 1884.

Borocitrate of Magnesia as a Solvent of Urinary Calculi.—Dr. N. Perez (*Boletin de Ciencias Medicas*, Guadalajara Estado de Talisco, Mexico) refers to the case of a boy, four years old, having a large calculus in his bladder. Before performing an operation he tried the application of the borocitrate of magnesia, of which he gave fifteen grains dissolved in one ounce of syrup, one to three tablespoonfuls every day. After three days of this treatment a good deal of white sediment appeared among the mucus in the urine, which continued about one month, the other phenomena disappearing, so as to cause belief in the recovery of the boy.

In consequence of this result the doctor proposed the same treatment in another boy having a large calculus in his bladder, for which an operation was contemplated. One month of this treatment was given, the urine during this time having a yellowish sediment. At one time he was called on account of severe symptoms of incomplete obstruction of the urethra near the glands. The doctor perceived something hard, which was really a foreign body in the urethra. He removed it with the forceps and it was found to be a small calculus. A slight urethritis followed after every symptom disappeared.

In both cases there is no doubt but that the calculi were composed of different salts, as the sediments were of different color, which shows that the medicine acted on both in the same way.

The formula of the remedy is:

℞ Carbonate of magnesia, 15 gr.
Acid, citric, } āā, ʒss.
Borate of soda, }
Aq. fervent q. s. ut solvatur.

This solution is spread on a glass for evaporation, obtaining in this way a salt in laminas, which is the borocitrate of magnesia and soda.

This salt was claimed to be a good dissolvent of the urinary calculi by Becker, and Madsen made comparative experiments with the benzoate of lithium, demonstrating the superiority of the borocitrate of magnesia.—A. R. in the *Cincinnati Lancet and Clinic*.

The Use of Salicylic Acid in the Treatment of Lupus Vulgaris.—I have for some time employed salicylic acid, in the form of ointment, as a remedy for eczema of the scalp, and impetigo contagiosa occurring in children, with the most satisfactory results, cases that have defied other treatment yielding rapidly to its agency, and I have been induced to make a further trial of it in other skin-affections.

By the kindness of Mr. Rigby, surgeon to the Doncaster Infirmary, I was permitted to employ it in a very bad case of lupus exedens, which had been for some time under his care.

The patient, a woman about 25 years of age, had her face terribly disfigured, the ulceration having destroyed one *ala nasi*, the whole of the cheek and eyebrow being also involved. She had been in the hospital before, and had improved under treatment with Donovan's solution and a visit to Harrogate. But on her return, although she was kept under observation and treatment, fresh tubercles developed, and the parts that had cicatrised soon became again involved, and she was re-admitted to the institution. I first tried the ointment of 15 grains to the ounce of vaseline, which was of no use; I then increased the strength to a drachm, and then to a drachm and a half to the ounce.

The ulcers soon began to heal, no fresh tubercles appeared; the cicatrices became soft and lost their shiny, unhealthy appearance, and the skin of the face is now almost sound. She was taking a mixture containing Donovan's solution and the liquor ferri dialysati. But as this had been administered without apparent benefit before admission, I think it is fair to give the credit to the external remedy. I have not heard of salicylic acid being employed before in the treatment of this particular disorder, and its action seems very satisfactory, especially as it does not appear to cause irritation.—J. G. Marshall, M. B. Cantab., M.R.C.S., in the *Brit. Med Journal*.

Therapeutical Changes.—It is curious to observe the shifting of the scenes of action in therapeutics. The new quarterly report of Messrs. Gehe has several interesting notes. It is mentioned that whilst a few years ago the price of quinidine (conquinine) was double that of cinchonidine, cinchonidine has lately found so much favor in the United States that its price has now become relatively higher than that of quinidine. This tendency has been favored by the large quantities of cuprea bark that have been worked during the last few years, since in it quinine is accompanied only by quinidine and by no cinchinodine. In Germany, the consumption of codeine has become so large that orders have to be executed in the order in which they are received, and a hope is expressed that its preparation synthetically upon the manufacturing scale, may become possible. Further, the demand for the glucoside adonidine, which is said to resemble digitaline in its action on the heart without being cumulative, has been so extensive that all native grown Adonis vernalis was bought up immediately after gathering, and it became necessary to look to Southern Russia for a further supply of the herb. A tincture from the flowers and leaves of convallaria majalis also remains in request as a substitute for digitalis; but digitaline, notwithstanding its competitors, still holds its place. Arbutine, the glucoside obtained from the leaves of arbutus uva ursi, is being used for diseases of the kidneys and bladder. As anæsthetics, the bromide and chloride of ethylene are stated to be again coming into favor for external use, and to these the iodide has been recently added. The two former are liquids, but the iodide is a white crystalline substance. Bromide of ethyl is also in active request for internal administration.—*The Lancet*, May 3rd, 1884.

The Abrus Poison—The seeds of the jequirity plant have been very extensively used in India for criminal poisoning, especially of cattle, and have been employed to some extent as a remedial agent. Further, MM. Cornil and Berlioz announced last year to the French Academy that their poisonous powers were due to the presence in them of a peculiar microbe. This, if true, is a most extraordinary fact, indicating that everything is to be resolved finally into germs, and making it probable that hereafter man will be found to be nothing but a compound animal, a sort of branching coral with the bones secreted by the innumerable polyps or microbes of which the human compound organism is formed.

These circumstances lend both practical and scientific interest to the elaborate investigation just completed by Surgeons C. T. H. Warden and L. A. Wad-

dell, of the Medical College Hospital, Calcutta. We are glad to announce and believe that there are other things in the universe besides bacteria, and that the *Abrus precatorius*, although not a virtuous plant, is not a germ factory, and does not spend its days and nights in the manufacture of bacteria, but accomplishes its nefarious purposes through a poisonous proteid—*abrin*—which seems to have many properties in common with the venoms of serpents. Messrs. Warden and Waddell seem to have done their work very carefully and thoroughly, and in their little brochure entitled "The Non-bacillar Nature of Abrus Poisoning," Calcutta, 1884, not only give a clear account of their methods and results, but also of the means of distinguishing the abrus roots from those of true liquorice, which they resemble.—*Medical News*, Aug. 9, 1884.

Abrus Precatorius.—M. Patein gives an account of an examination of the external coat of the seeds of jequirity (*Journal de Pharmacie*). A large proportion of lime and rather more than the proportion of iron in hæmoglobin, has been found in the testa. The coloring matter is soluble in alcohol, and seems to contain a salt of iron. It is precipitated by subacetate of lead as a greenish substance, is turned green by alkalies and reddened again by acids. In a paper read before the Pennsylvania Medical Society (*Pharmaceutical Journal*) Dr. Shoemaker reports the results of some trials with an infusion of jequirity seeds on various affections of the skin. The method was employed on the principle that "granular lids" are cured by the induction of an ophthalmia of croupous nature. Lupoid conditions, epithelioma, and sloughy ulcers were found to be but little influenced by a weak infusion, though when a stronger "emulsio-infusion" was employed a specific inflammation was set up which occasionally, when applied over extensive surfaces on sensitive patients, assumed alarming proportions. The products of the inflammation, however, formed an immense crust, under the protection of which the healing process rapidly went on, leaving a new and healthier ulcer when the scab was removed, so that by repetition of the application cures were speedily effected. Dr. Shoemaker thinks jequirity will prove to be a most powerful agent in certain affections of the skin, though it ought to be used with due caution.—*Lancet*, July 5, 1884.

Grindelia Squarrosa.—I have been using for the past three years, with marked success, in chronic malarial poisoning, pain in the left side, enlargement of the spleen, etc., the fluid extract grindelia squarrosa. It appears to have a specific action in these difficulties, and I have been much pleased with the success attending its administration in these cases. It is particularly good in cases attended with pain in the left side, and where the ordinary anti-periodics fail to produce relief. I have no particular preference for any of the many manufacturers, but my experience leads me to say that Parke, Davis & Co.'s fluid extracts act as well as, if not better than, any I have used,—at least, I have found them more reliable and more uniform in strength than many others in the market. I could report several cases where the symptoms were marked, and the patients had taken every variety of anti-periodics, and had suffered for many months, that were cured entirely and in a short time with this remedy; but as you desire short articles and to the point, I will simply give my usual formula for adults:

℞ Fl. ext. grindeliæ squarrosæ, ʒ vi.
Glycerini, ʒ ii.
Alcoholis dil. q. s., ʒ iv.

M. S. A teaspoonful once in 4 hours.—D. E. Smith, M. D., in *Medical Tribune*, June 15, 1884.

Menthol Neuralgia Pencils.—Last December, page 612, we noticed this German novelty, and spoke of the pencils as consisting of a mixture of menthol, thymol, and eucalyptol. E. Mylius, in the *Pharm. Central.*, states that the true neuralgia pencil (Migräne Stifte) consists solely of pure menthol, and gives a ready method of detecting any likely adulteration. The substance of the pencils must exhibit a coarse crystalline structure and not have a chalky look. A small quantity should be scraped off with a khife, and the melting-point determined, which should not be higher than 38° C. The melting should also take place simultaneously throughout the entire mass, and not gradually. This best proves the presence or absence of substances of a higher melting point. Paraffin, which melts at a lower temperature, is found by treating a portion of the mass with alcohol, in which menthol readily dissolves, while paraffin, if present, would remain behind.—*The Chemist and Druggist*, June 14, 1884.

Ptosis and Diplopia from Gelsemium.—R. T., a man. aged 30, consulted me on July 16th for severe neuralgia of the face. I gave him a quinine mixture, with three-minim doses of liquor gelsemii fluid, *U. S. P.*, every four hours. He came again the following day with his neuralgia cured, but suffering from the diplopia and dimness of sight of gelsemium poisoning. Moreover, there was almost complete loss of the power over the left eyelid, and in a lesser degree of the right eyelid also. I gave him a simple quinine-mixture, and the next day he was quite well. Gelsemium, in my experience, to be useful, must be pushed until the physiological effects are produced; but I have never before seen or heard of dropped lids being produced from its administration. In this case only six three-minim doses had been taken.—C. H. Watts Parkinson, M.R.C.S., in the *Brit. Med. Jour.*

Glycerised Iodine as an External Application Small-Pox.—Dr. Bartholou, an army-surgeon, relates in the Lyon Médical, February 3rd, some additional cases, in order to show the great advantage which may be derived in very bad cases of small-pox, by painting the surface with the following mixture: Tincture of iodine, 30 parts; glycerine, 60 parts; and iodide of potassium, ¼ part. The application is not unpleasant to the patient, and may be made from the fifth or sixth day of the eruption to the eleventh or twelfth. During this period, it is repeated four times daily, and powerfully contributes to the absorption of pus, and the desiccation of the pustules, after which it is discontinued.—*Medical Times and Gazette*, July 12, 1884.

The Action of Adonis Vernalis on the Circulation.—This was the subject of an elaborate paper, by Altmann, read at a recent meeting of the Berlin Verein für innere Medizin ("Deutsche Medizinal-Zeitung," July 10, 1884,) which concludes as follows: The Adonis vernalis is a heart-regulating medicine in the same sense that digitalis is; it increases the power of the heart, retards its action, and heightens the arterial pressure; it quickly gives rise to increased diuresis; the indication for it is the same as for digitalis; it operates more rapidly than digitalis, and has no cumulative action; it often works where digitalis is ineffectual.—*New York Medical Journal*, August 2nd, 1884.

Pelletierinum Tannicum.—The alkaloid pelletierinum, lately extracted from the cortex radicis granati, is, according to Dr. H. Witt (St. Petersburg Weekly Medical Journal, April, 1882) the most certain of all our remedies for tapeworm. In five cases, in which for a number of years all the usual remedies, even extr. filic. maris, had proved themselves to be unsuccessful, about 22 grains of pelletierinum tannicum, followed by a tablespoonful of castor oil, had the effect that the dead tapeworm appeared unbroken in the stool. The remedy is easily administered, as it is perfectly tasteless.—*Sleeman's Drug and Chemical Circular.*